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THE
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JOURNAL OF BOTANY;

CONTAINING

FIGURES AND DESCRIPTIONS

OF

SUCH PLANTS AS RECOMMEND THEMSELVES BY THEIR NOVELTY, RARITY, HISTORY, OR USES;

TOGETHER WITH

BOTANICAL NOTICES AND INFORMATION,

AND

OCCASIONAL MEMOIRS OF EMINENT BOTANISTS;

BY

SIR W. J. HOOKER, K.H., L.L.D., F.R.A., & L.S.

VICE-PRESIDENT OF THE LINNÆAN SOCIETY; HONORARY MEMBER OF THE ROYAL IRISH ACADEMY; MEMBER OF THE IMPERIAL ACADEMY CÆSAR-LEOPOLD. NATURÆ CURIOSORUM OF THE IMPERIAL SOCIETY CÆSAR. NATURÆ CURIOSORUM OF MOSCOW; OF THE ROYAL ACADEMIES OF SWEDEN, PRUSSIA, LUND; OF THE ACADEMIES OF PHILADELPHIA, NEW YORK, BOSTON; OF THE NAT. HIST. SOCIETY OF MONTREAL, &c. &c.
AND DIRECTOR OF THE ROYAL BOTANIC GARDENS OF KEW.

VOL. II.

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Notes of a BOTANICAL TOUR *in the* WESTERN AZORES.

(*In a Letter from* HEWETT C. WATSON, Esq., *to the Editor, dated, November,* 1842.)

IT was my wish to write to you from the Azores, by way of reporting the progress I was likely to make in investigating the botanical productions of those islands, during the surveying operations of Her Majesty's War Steamer, Styx, commanded by Captain Vidal; to whom I had been introduced, through the instrumentality of yourself and Captain Beaufort, as a person, willing to go out at my own cost, for that object, provided an order from the Admiralty was obtained for a passage in the Styx. I postponed writing, until I should reach the island of Flores, often stated to have originally derived its name from the beauty or variety of its flowers; and, by this postponement the intention was ultimately defeated. The West India mail-packets touch at Fayal on their homeward passage; but the island of Flores is upwards of a hundred miles from Fayal, with irregular and uncertain opportunities of communication, and before our return to Fayal, I had resolved to take a passage myself in the first mail-steamer to England that should touch there after we returned to that island. This resolution I was unfortunate enough to carry into effect, and by so doing, was subjected to the tediousness of a rough passage, protracted to twice its usual length, through sheer mismanagement in taking on board the mail-packet barely sufficient coals to carry us to Falmouth with a fair wind. The wind proved adverse the whole way, and for a few days blew a hard gale, so that our stock of coal was exhausted before we could make the English Channel; and there was no resource left but that of turning back and running before the wind, under such small sails as could be raised in the steamer, across the Bay of Biscay to Corunna, for a fresh supply of coal. In this dilemma, it was some consolation to anticipate a botanical day or two on Spanish ground; but scarcely was our anchor down before we had notice from the Spanish authorities that none of us could leave the ship, which must be put under quarantine, in consequence of having come from the West Indies. Could this have been foreseen, I should have spent a fortnight on shore in Fayal, and taken my passage in the succeeding mail-steamer; the Styx being about to proceed to the more eastern islands of Terceira and Santo Miguel, to which I would not go, as it appeared very uncertain whether I should be able to land on them for botanizing. By coming home in the mail-packet Dee, I thus lost the opportunity of autumnal botanizing in Fayal, and merely wasted the time in playing at "pitch and toss" in the Bay of Biscay.

My collections were left on board the Styx, to be brought to England in December; and in their absence, at present, I cannot speak with certainty about the specific names of several species that were novelties to me, and therefore not to be determined in the absence of botanical works, which are articles unknown in the Azores. With a few exceptions, all my specimens belong to European genera. Several of the species are identical with those of the South of Europe; others being plants of Madeira or the Canaries; and a few possibly undescribed kinds. Some of these latter species have been distributed in Guthrie's collections under the specific names of "*Azorica*" and "*Calderensis*;" others were probably not gathered by that botanist.

We were rather late in reaching the Azores; that is, late for a botanist to commence collecting in islands whose winter temperature is equal to that of May in England. I had expected to sail in April, but a succession of trifling circumstances (not all of them accidental or unavoidable, I suspect) concurred to detain the Styx a month longer in England, and it was not until the 18th of May that we at length steamed out of Plymouth Harbour. The War Steamers are built with a much sharper run from the deck to the keel, than is seen in the ordinary trade and passenger steamers; their form being something like the rapidly sloping roofs of old-fashioned houses turned upside down. In consequence of this build, they roll about most tumultuously on the ocean, and are by far the most uncomfortable ships in regard to their motion, that my slender experience has hitherto made me acquainted with. However, if the Styx rolled much from side to side, she rolled onwards also at a brisk rate; and by eight o'clock in the morning of the 25th, I was gratified, on going on deck, by seeing that we were already among the Central Azores, having passed Terceira, and being then on the north side of Santo Jorge; beyond which, in the distance, appeared the lofty Peak of Pico, rising high and sharp into the deep blue sky, with a wreath of white clouds floating like a loose drapery around its dark sides, much below the summit. Before one o'clock of the same day, we dropped our anchor in the Bay of Horta, the principal town of the island of Fayal, right opposite to which, at a distance of five miles, is the northern extremity of Pico island, whose towering Peak thus forms a noble background to the sea-view from the town of Horta. Looking at this great volcanic cone from the deck of the ship, I felt extremely anxious to be upon it, anticipating a rich harvest of Alpine plants, on a mountain whose altitude had been variously estimated from 6700 to 9000 feet. This anticipation was not afterwards realised; the other islands visited yielding me a larger supply of such plants, although their mountains have only half the elevation of the Peak of Pico.

To a lover of plants, who had before never been farther south than Cornwall, the island of Fayal afforded much of interest and attraction. It is of small size, about ten and twelve miles in cross diameters. Everywhere the coast is formed of precipitous cliffs, with the exception of Praya, the Bay of Horta, and its suburb Port Pym. The Bay is formed by a crescent line of hills varying from three hundred to something near a thousand feet of elevation, by guess. Beyond the middle and highest part of this line of hills, and near to the centre of the island, is an elevated valley, several hundred feet above the sea-level, which is said to have derived its name of *Flamingos,* from having been the spot selected for their home by a body of Flemish settlers. Beyond this valley, again, the ground rises rapidly till we have passed the centre of the island, and approached within three or four miles of the coast, on the contrary side to that on which the Bay of Horta is situated. Here we suddenly come to the edge of the "Caldeira," a deep and nearly circular basin, once no doubt a boiling crater, now, as peaceful and lovely a scene as I ever beheld. It is scooped out, as it were, in the highest part of the island, near the north-west coast, is entirely surrounded by the mountain which constitutes its walls, and is consequently quite without any visible outlet for the streams which pour into it. From the edges of this basin, which I suppose to be between three and four thousand feet above the sea, the land falls in every direction towards the shore, terminating there abruptly in precipitous cliffs, against which the waves are constantly beating. In the Bay of Horta, and in a smaller bay at Port Pym, there are narrow belts of grey sand on the shore; and the same sort of shore is seen at Praya, a couple of miles from Horta, on the other side. My botanizing lay in the neighbourhood of these sandy bays, and in walks from them to the mountains about the Caldeira. Twice I descended into the Caldeira; and once I landed from a boat on the cliffs, several miles north-east of the sands, and strolled about the neighbouring country for a few hours. My rambles thus covered about one third of the island, and were made chiefly in the month of June and beginning of July, with a few short walks about the town of Horta, in the end of May and middle of September.

Of maritime plants, I found only a scanty supply, chiefly on the sands about Port Pym. Here I gathered *Juncus acutus*, *Polygonum maritimum*, *Salsola Kali*, a species of *Cakile*, and a *Convolvulus*, much resembling *C. Soldanella*, but with white and larger flowers. On the other side of Horta, I saw *Euphorbia Peplis*. The rocks of the coast produced another species of *Euphorbia*, an *Arenaria*, and a profusion of *Asplenium marinum*, which indeed grew all over the islands.

In the vicinity of Horta, the land is almost all under cultivation, having been converted into gardens, orange orchards, and cultivated fields, which are fenced by stone walls, with very narrow and rugged roads winding between them, also flanked by the monotonous stone walls. Living reeds are almost the only other material used for fences ; and planted in rows, they answer this purpose very well, growing ten feet high and upwards, so as to constitute an excellent protection against the violence of the Atlantic gales, before which their elastic stems bend without breaking. Against the trespasses of man they can be no defence ; but by cutting down some of them to be tied as rails across those which are left growing, a sufficient fence against cattle may readily be made. There is a constant renovation of these reed hedges from the succession of suckers thrown out by their roots.

The field crops consist of *maize*, *wheat*, *beans*, *lupines*, *flax*, *potatoes*, and various *gourds*. The gardens produce *lemons*, *oranges*, *grapes*, *figs*, *apricots*, *peaches*, and *bananas*. *Strawberries* do not succeed well, and the fruit which they do bear is with difficulty preserved from the innumerable blackbirds. *Apples* I observed in Pico and Flores, but none in Fayal. *Cherries*, *raspberries*, *gooseberries*, or *currants*, I saw neither in Fayal nor in any of the other islands. As to ornamental shrubs and flowers, anything that grows in our green-houses might or does grow in the open ground in Fayal ; but the violent sea-breezes would break and destroy most kinds of trees, as they rose above the shelter of the walls, or of those robust evergreens, which are constantly planted in the gardens and orange orchards to protect the less hardy kinds. The *Pas-*

siflora cærulea has become wild, and thrives prodigiously. *Canna Indica* is occasionally found wild, with flower-stalks five or six feet high. The *Amaryllis Belladonna* is abundant in various places about Horta. Yet these three should probably be regarded as introduced plants, which have passed from the gardens to the wilds.

The use of stone walls and reeds for fences is prejudicial to the pursuits of the botanist, who may look in vain for hedges or hedge-banks, meadows or pastures, about the town of Horta or elsewhere in the cultivated regions of Fayal. The pedestrian walks along very narrow paved or rocky roads, hemmed in between two stone walls from six to ten feet high, or along narrow footpaths which cross only cultivated fields. These peculiarities, of course, greatly affect the spontaneous vegetation. What may be considered the characteristic Flora of the Azores, is very sparingly scattered about the town in a few spots, whose steepness or exposure has interfered to discourage the efforts of the cultivator. The wild plants which are met with, are chiefly annual weeds of cultivated grounds, plants which thrive about inhabited places, and such as are adapted to exist on rocks, or in the crevices of stone walls. Some of these are among the commonest weeds of England, as *Sisymbrium officinale* and *Sherardia arvensis*. Others are still English, but among our most local kinds, as *Cynodon Dactylon* and *Polycarpon tetraphyllum*. Others, again, though quite unknown in the English Flora, are still plants of south Europe; as *Phytolacca decandra* and *Portulaca oleracea*. But *Sida Canariensis* (of Guthrie's collection) and *Vicia albicans* are extra-European species, derived from other islands of the Atlantic.

Passing inland from Horta towards Flamingos, we gradually lose many of these ordinary species of cultivated countries, and find the proper vegetation of the Azores, where left more in a state of nature. *Myrica Faya* and *Myrsine retusa* grow on the low hills which encircle the bay, immediately behind the town. *Erica Azorica* (of Guthrie's collection, but in reality *E. scoparia*) and *Thymus cæspitosus* are plentiful on these hills, though still more abundant on the wilder mountains above Flamingos. *Spartium junceum* and *Asclepias fruticosa* (growing on the banks of a ravine, where a river crosses the line of hills and forms a waterfall in its approach to the town) may be indigenous, though very local. About Flamingos, the banks of the river are covered with many species of *Ferns,* and a few of the mountain shrubs are seen, the seeds of which probably come down with the streams, as *Menziesia polifolia* and *Calluna vulgaris ;* the former of which is extremely abundant on the hill-sides between Flamingos and the Caldeira, and is doubtless the *crimson-flowered heath* mentioned by Messrs. Bullar in their account of the Azores.

Though the orange and lemon ripen their fruit at Flamingos, cultivation ceases altogether within a thousand feet above the village ; the highest crops being the *potato* and " yam," as it is called, but it is apparently the *Caladium esculentum.* The proximity of the clouds probably arrests cultivation at this moderate altitude; the " yam " being better adapted to withstand moisture than the other cultivated food-crops of the Azores ; indeed, it thrives best in wet or marshy places.

About the upper limits of cultivated ground, where patches of *Myrica Faya* and other indigenous shrubs intermingle with the spaces cleared for the crops, I saw *Rosmarinus officinalis* and *Lavandula Stœchas,* now quite wild, yet possibly originating from the cottage-gardens of Flamingos, in which they are planted ; as I did not meet with them in other parts of Fayal, or in other islands. Above the region of cultivation, there is a broad belt of natural wood, which grows up again as it is cut down for fuel. It consists chiefly of *Erica scoparia, Myrica Faya, Myrsine retusa,* and a species of *Juniperus,* which the natives call " Cedros ;" the latter, being very abundant in the Azores, causes several places to be called by its name of *Cedros.* Intermixed with these, but chiefly in the ravines down which the mountain streams rush rapidly, the *Vaccinium Maderense* displays its fine clusters of long drooping blossoms. A large-flowered *Rubus* sends long rambling shoots among the other shrubs, to the great inconvenience of a botanical pedestrian and the barefooted peasants. *Ilex*

Perado, *Viburnum Tinus*, *Laurus Canariensis* (?), and a handsome shrubby *Euphorbia* also occur in the ravines. *Pteris aquilina* and *Blechnum boreale* are very abundant among the shrubs; and many other *ferns* may be seen growing luxuriantly in the ravines.

As we keep ascending towards the Caldeira, these shrubs become less plentiful. The large mass breaks into clumps, between which various grasses and other herbaceous plants form a pasturage for cattle, and the more humble *Menziesia polifolia* bespangles the ground. Higher still, the shrubs are reduced to single and stunted bushes; and, at last, at the rim of the Caldeira, they cease altogether; the ground being there covered with a thick elastic mass of grass and moss. *Serapias cordigera* occurs rather frequently above Flamingos, and *Erythræa diffusa* much more so. Between Flamingos and the Caldeira, chiefly in the ravines or on banks facing from the sun, I observed species of *Bellis*, *Luzula*, *Lysimachia*, *Carex* and *Cardamine*, which were unknown to me, but to which Mr. Guthrie has attached names on the labels distributed with his specimens. *Tormentilla officinalis* and *Fragaria vesca* were among the commonest plants on the declivities of the mountains.

But I must now rest my pen here, without taking you and it into that lovely valley of the Caldeira, so interesting to the botanist, so delightful to the lover of scenery. The Caldeira of Fayal, the Peak of Pico, the waterfalls of Flores, and the precipice of Corvo, are the four most inviting localities for the botanist who visits these more westerly of the Azorean islands. Another day I shall be happy to send you some account of them, as well as a full list of the plants collected; to which, the geographical position of the islands, so far in the Atlantic, must give some interest with the readers of the *Journal of Botany*. I may here just remark that there are no indigenous trees in the islands which I visited. The characteristic features of the vegetation consist in the abundance of evergreen shrubs and ferns, with a few peculiar alpine plants. Some of the shrubs are almost arborescent; the stems of the

heath attaining a circumference of two or three feet, and those of the *Juniper* occasionally three to four feet. *Ferns* constitute about a twelfth part of the whole flora, excluding the other cryptogamic plants. Of the genera *Salix*, *Rosa*, *Sedum*, *Sempervivum*, *Saxifraga*, *Statice*, *Linum*, or *Gentiana*, I did not observe a single indigenous species.

(*To be continued.*)

Descriptions of four NEW GENERA OF PLANTS *from the* ORGAN MOUNTAINS, *by* GEORGE GARDNER, F.L.S., *Professor of Botany and Natural History, in the Andersonian University, Glasgow.*

BOWMANIA.

(COMPOSITÆ-NASSAUVIACEÆ.)

CHAR. GEN. *Capitulum* multi-60-70-florum. *Invol.* pluriseriale, squamis laxis foliaceis oblongo-lanceolatis ciliatis apice subdentatis æqualibus. *Receptaculum* alveolatum piloso-fibrilliferum. *Flores* omnes hermaphroditi. *Corollæ* bilabiatæ, labio exteriore 3-dentato ligulæformi, in floribus exterioribus longiore, interiore bipartito lobis revolutis. *Filamenta* glabra. *Antheræ* basi bisetosæ. *Styli* rami lineares compressi divergentes apice truncati hispiduli. *Achænia* subteretia ovato-oblonga glanduloso-pilosa disco epigyno dilatato coronata. *Pappus* pluriserialis rufus, setis deciduis filiformibus scaber.—Herba *Brasiliana, elata, tomentosa, simplex*; foliis *alternis, denticulatis*; capitulis *magnis, laxe paniculatis, aurantiacis.*

I. Bowmania *verbascifolia, Gard. Herb. Bras. n.* 5797.

HAB. In dumetis, in summitatem montis, *Serra dos Orgáos*, Prov. Rio de Janeiro, Brasiliæ. Aprili florebat.

Herba 4-6 pedalis. *Caulis* simplex, erectus, angulato-striatus, dense lanuginoso-tomentosus, usque ad apicem distanter foliosus. *Folia* alterna penninervia, subamplexicaulia, lanceolata, subacuminata, basi in petiolo dilatato attenuata, crenato-denticulata, supra pilosa, subtus lanato-tomentosa, radicalia et inferiora pedalia et ultra. *Panicula* laxa multiflora, foliosa, ramis dichotomis tomentosis. *Capitula* multi-(60-70)-flora, homogama, 16 lin. lata. *Involucrum* laxe imbricatum, squamis pluriserialibus, foliaceis, dense pilosis, margine ciliatis, apice subdenticulatis, exterioribus ovato-oblongis, acutis, interioribus lineari-oblongis, acuminatis. *Receptaculum* alveolatum piloso-fibrilliferum. *Flores* omnes hermaphroditi. *Corolla* aurantiaca, extus pilosiuscula, 8 lin. longa, bilabiata, labio exteriore ligulæformi 3-dentato, interiore bipartito, lobis revolutis linearibus. *Filamenta* complanata, glabra. *Antheræ* concretæ lineares, basi bisetosæ, apice appendice lineari-lanceolata anthera vix duplo breviore terminatæ. *Stylus* teres, glabers, basi bulbosus; rami breves, divaricati, lineari-compressi, truncati, hispiduli. *Achænium* teretiusculum, immaturum 2 lin. circiter longum, ovato-oblongum, brevirostratum, apice in disco magno dilatatum, glanduloso-pilosum, pili glanduliferi breves, cæteris longioribus. *Pappus* pluriserialis, rufus, setis deciduis filiformibus scabers.

This genus holds an intermediate station between *Trixis* and *Chabræa*, differing from the latter in having an involucre of several series, a deeply alveolate and pilose receptacle, and a pappus of more than one series; and from the former in its having a many-flowered capitulum, and a foliaceous involucre of several series. I have selected it to commemorate among Botanists the name of my deeply lamented, kind, and excellent friend, the late J. E. Bowman Esq. of Manchester, not less known by his botanical than by his geological labours and attainments. A figure of it has been prepared, which will appear in an early part of Hooker's Icones Plantarum*.

LEUCOPHOLIS.

(COMPOSITÆ NASSAUVIACEÆ.)

CHAR. GEN. *Capitula* 10-flora in glomerulum subglobosum aggregata, subsessilia. *Invol.* squamæ subæquales laxe imbricatæ lineari-lanceolatæ acuminatæ membranaceæ albidæ glabræ. *Receptaculum* angustum nudum. *Corollæ* tubulosæ regulariter 5-fidæ. *Antheræ* vix exsertæ basi bisetosæ, appendicula brevi-lanceolata. *Styli* rami exserti divaricati truncati hispidi. *Achænium* oblongum villosum. *Pappus* uniserialis setaceus scaber.—Frutex *Brasiliensis* Haplostephii *aut* Lychnophori *facie.* Rami *teretes, dichotomi, dense lanuginoso-tomentosi.* Folia *conferta, sessilia, deflexa, margine revoluta, supra glabra, subtus cano-tomentosa.* Glomeruli *ramos terminantes.* Corollæ *lilacinæ.*

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* Vol. 6. Tab. DXIX. DXX.—*Ed.*

1. Leucopholis *phylicoides, Gardn. Herb. Bras. n.* 5772.

Hab. In sphagnosis versus summitatem montis, *Serra dos Orgâos,* Provinciæ Rio de Janeiro, Brasiliæ. Aprili florebat.

Frutex bipedalis. *Rami* teretes, dichotomi, dense foliosi et lanuginoso-tomentosi. *Folia* confertissima, alterna, sessilia, oblonga, obtusa, 3-4 lin. longa, 1½ lin. circiter lata, deflexa, margine revoluta, supra glabra, subtus cano-tomentosa. *Capitula* subdecemflora, homogama, ad apicem ramorum in glomerulum subglobosum aggregata, subsessilia. *Involucrum* laxe imbricatum, squamis pluriserialibus, subæqualibus, lineari-lanceolatis, acuminatis, membranaceis, glabris, albidis. *Receptaculum* angustum, nudum. *Corolla* lilacina, glabra, tubulosa, 1½ lin. longa, regulariter quinquefida, lobis brevibus lanceolatis. *Filamenta* complanata, glabra. *Antheræ* vix exsertæ, concretæ, lineares, basi bisetosæ, apice appendice lanceolata *antheræ* multo breviore terminatæ. *Pollen* globosum, læve. *Stylus* teres, glaber, basi bulbosus : rami breves, truncati, divaricati, hispidi. *Achænium* oblongum, dense villosum. *Pappus* uniserialis, multisetosus, setis scabris corolla longioribus.

Nomen ex λευκος *albus,* et φολις *squama.*

This genus differs from all the allied ones which are described by De Candolle, in having a regular corolla, a structure which, along with its habit, approximates it to the subdivision of *Albertiniæ* of the tribe *Vernoniaceæ.*

HOCKINIA.

(Ord. Nat. GENTIANEÆ.)

CHAR. GEN. *Calyx* valvatus exalatus 5-partitus, lobis æqualibus acuminatis planis. *Corolla* 5-partita regularis campanulato-infundibuliformis, lobis cum fauce continuis, tubo subnullo. *Filamenta* nulla. *Antheræ* erectæ, connectivo in apiculum lanceolatum producto. *Pollen* globosum echinulatum. *Stylus* filiformis aut subnullus. *Stigma* bilamellatum vel umbraculæforme villosum. *Discus* glandulosus nullus. *Capsula* bilocularis placentis margini interno valvularum insertis, intus discretis, loculis demum versus apicem dehiscentibus stylo persistente connexis.—Herba *Brasiliana, annua, ramosissima, foliosa, floribus cyaneis, pedicellis bibracteatis.*

1. Hockinia *montana.*

α. stylo longo, stigmate bilamellato. *Gardn. Herb. Bras. n.* 5821 *et* 540 *ex parte.*

β. stylo subnullo, stigmate umbraculæformi. *Gardn. Herb. Bras. n.* 5822 *et* 540 *ex parte.*

HAB. In humidis rupestribus versus summitatem montis, *Serra dos Organos*, Provinciæ Rio de Janeiro, Brasiliæ. Martio florebat.

Herba annua, pedalis, erecta, ramosa, foliosa. *Rami* oppositi, fastigiati, glabri, quadrangulares, angulis vix alatis: internodia folia excedentia. *Folia* opposita, patentia, breve petiolata, 8-10 lin. longa, 3 lin. circiter lata, lanceolata, acuta, basi attenuata, 3-nervia, glabra. *Cyma* triflora, pedicellis subæqualibus, 4-5 lin. longis, erectis, versus apicem bibracteatis, bracteis linearibus. *Calyx* ovatus, 3-lin. longus, 5-partitus, lobis valvatis lanceolato-linearibus acuminatis, erectis. *Corolla* cyanea, semiuncialis, campanulato-infundibuliformis, lobis ovatis acuminatis, tubo subnullo. *Genitalia* inclusa. *Filamenta* nulla. *Antheræ* 5, in fauce sessiles, sagittatæ, erectæ, biloculares, loculis connectivo hinc in apiculum lanceolatum producto distinctis. *Pollen* luteum, globosum, echinulatum. *Stylus* 2 lin. circiter longus (in var. β. subnullus) persistens. *Stigma* bilamellatum, villosum (in

var. α. umbraculæforme). *Capsula* bilocularis, placentis margini interno valvularum insertis, intus discretis, loculis demum versus apicem dehiscentibus stylo persistente connexis. *Semina* plurima, complanata, testa eleganter reticulata.

This genus is allied to *Irlbachia* of Martius, and *Leianthus* of Grisebach, but differs essentially from both in the shape of its corolla, and sessile anthers. Var. α. has the stigma of *Irlbachia*, while β. has that of some of the species of *Leianthus*. Both of the varieties grow together, and are equally abundant. I was at first inclined to consider them two distinct species, but with the exception of the very short style and umbraculiform stigma of var. β, there is nothing to distinguish them. This remarkable difference in the form of the stigma is most probably caused by the depauperation of the style. I have named the genus in honour of my friend G. C. Hockin, Esq., of Rio de Janeiro, who accompanied me on my last journey to the summit of the Organ Mountains, and to whom I am deeply indebted for much kindness during my wanderings in Brazil. It will also serve to commemorate the name of his brother, John Hockin, Esq., of Dominica, who is devoting much attention to the botany of that Island.

NAPEANTHUS.

(ORD. NAT. CYRTANDRACEÆ.)

CHAR. GEN. *Calyx* laxe tubulosus 5-fidus, laciniis oblongis acutis. *Cor.* hypogyna tubuloso-infundibuliformis, tubo brevi oblique ventricoso, limbo patente profunde 5-fido subbilabiato, labio superiore 2-lobo, inferiore 3-lobo, lobis obtusis, superioribus longioribus et angustioribus. *Stamina* 4 didynama cum quinti postici rudimento, basi tubo inserta, inclusa; *antheris* ovatis non cohærentibus. *Discus* hypogynus nullus. *Ovarium* oblongum uniloculare, placentis duabus parietalibus e lamina angusta ortis utrinque multiovulatis. *Stylus* filiformis simplex. *Stigma* depresso-capitatum, subbilobum. *Capsula* calyce inclusa ovato-oblonga, unilocularis, bivalvis, valvis medio laminam fissilem in

placentam planam bilobam utrinque seminiferam expansam gerentibus. *Semina* plurima pendula nuda elliptico-oblonga echinulata, funiculo brevi basi dilatato. *Testa* striata fibrosa. *Embryonis* exalbuminosi orthotropi, cotyledones breves, obtusæ. — Suffrutex *Brasiliensis parvus; foliis oppositis, subinæqualibus, sessilibus, pubescentibus, apice vix crenatis, pedunculis axillaribus umbellatis, pedicellis* 1-*rarius* 2-3 *floris, corollis roseis.*

1. Napeanthus *Brasiliensis, Gardn. Herb. Bras. n.* 581.

HAB. In sylvis densis primævis in montibus vulgo *Serra dos Organos,* Provinciæ Rio de Janeiro, Brasiliæ. Februario florebat.

Suffrutex parvus. *Caulis* ascendens, simplex, 2-6 pollicaris, ad apicem folia gerens. *Folia* conferta, opposita, sessilia, inæqualia, majora 4-8 poll. longa 1½-2 poll. lata, obovato-oblonga, apice obtusissima, obsolete crenata, basi longe cuneata, supra viridia glabriuscula, subtus pallidiora pubescentia. *Pedunculi* 2-3, axillares, umbellati, 3 poll. circiter longi, umbellis 3-5 floris, basi bibracteatis. *Bracteæ* oblongæ, 2 lin. circiter longæ, sessiles, subtus pubescentes. *Pedicelli* 12-15 lin. longi, 1-rariter 2-3-flori. *Calyx* liber, glaber, nervosus, late tubulosus, 5 lin. circiter longus, 5-fidus, laciniis oblongis, acutis. *Corolla* rosea, hypogyna, tubuloso-infundibuliformis, tubo brevi, oblique ventricoso, limbo patens, profunde 5-fido, subbilabiato, labio superiore 2-lobo, inferiore 3-lobo, lobis obtusis, superioribus longioribus et angustioribus. *Stamina* 4, didynama, cum quinti rudimento, basi tubo inserta, inclusa; *antheris* ovatis non cohærentibus. *Discus* hypogynus nullus. *Ovarium* oblongum uniloculare, placentis duabus parietalibus e lamina angusta ortis, utrinque multiovulatis. *Stylus* filiformis simplex. *Stigma* depresso-capitatum, subbilobum. *Capsula* calyce inclusa, ovato-oblonga, unilocularis, bivalvis, valvis medio laminam fissilem, in placentam planam bilobam utrinque seminiferam expansam gerentibus. *Semina* plurima, pendula, nuda, elliptico-oblonga, sublente echinulata, funiculis brevis basi dilatatis. *Testa* striata, fibrosa. *Embryo* exalbuminosus, orthotropus: cotyledonibus obtusis.

Nomen ex *ναπος, εος, nemus*, et *ανθος flos.*

This plant is remarkable as being only the second of the tribe to which it belongs that has yet been discovered on the American Continent. The other, *Klugia azurea* Schlect., is from Mexico, and is principally distinguished from the present in habit, and by its personate corolla.

Glasgow, Aug. 16th, 1842.

Botanical Excursions in South Africa, *by*

C. J. F. Bunbury, Esq.

(Continued from page 570 *of vol. I.)*

2. *Journey from Cape Town to Albany.—Sir Lowry's Pass, and the Houw Hoek.—Bad Roads.—Zwellendam.—The Gauritz River.—Attaquas Kloof.—Lange Kloof.—Jagersbosch.—Camtoos River.—Port Elizabeth.—Uitenhage.—The Bush Country.—Arrival at Graham's Town.*

About two months after our first arrival at the Cape, I set out from Cape Town in the suite of his Excellency the Governor, who had determined to proceed with the least possible delay to the Eastern frontier, which was by no means in a tranquil or satisfactory condition. Our party amounted to six, namely—the Governor; his military secretary, Major Charters; his aid-de-camp, Lieutenant George Napier; Major Michell, surveyor-general of the colony; Mr. Clarke, of the 72d Regiment; and myself; besides servants. I must remark, before I proceed to give any account of our journey, that I found it more fatiguing, and (until we reached the Eastern province) considerably less interesting, than I had expected; for the rapid rate at which his Excellency thought it necessary to travel was very inimical, even to accurate observation of the face of the country, and still more so to the collecting of plants or other objects of natural history. I do not, therefore, myself, feel entire confidence in the observations which I was able to make under such unfavourable circumstances.

The waggons of the party, three in number, set out from Government House at nine A.M., on the 22d of March: the leading waggon, in which were Major Michell, George Napier, and myself, being drawn by eight horses, the others each by ten. Beyond the immediate neighbourhood of the town, these waggons are the only vehicles that can travel on the horrible roads of the country, and they are among the most striking objects to the eye of a stranger. The generality of them, especially those which come from distant parts of the interior, are drawn by oxen, of which an enormous number are yoked to each; it is a curious sight to see, as one may, any day at the Cape, a team of twelve, fourteen, or even as many as twenty bullocks drawing one of these waggons; appearing from a distance, as they wind slowly over the sands, like some strange centipede; the crack of the driver's huge whip resounding like a musket shot.

March 22, 1838.—To return to our proceedings: the first day's journey, of thirty-five miles, was tolerably easy. We crossed the Flats in a direction to the Southward of E., and about 3 P.M. reached their limit at the Erst (or First) River, a stream at this time inconsiderable, but often formidable in winter. From hence onward, the loose white sand of the Flats was succeeded by a hard ironstone gravel. Presently we entered the fine vale of Hottentot Holland, half enclosed by craggy and picturesque mountains, which, curving round like part of an amphitheatre, bounded the view on our left and in front. On the right was False Bay, hemmed in by a continuation of the same chain of mountains, which terminates to the S. in Cape Hangklip, the point opposite to the Cape of Good Hope.

We stopped, after eight hours' travelling, at a small inn situated just at the foot of the mountains, and after dark we were joined by the Governor and the rest of the party, who, journeying on horseback, had set out much later from Cape Town.

March 23.—The next morning we started at half-past six, and crossed the mountains by "Sir Lowry's Pass," an excellent road constructed over this formidable barrier by Major Michell, while Sir Lowry Cole was Governor of the colony. A thick mist came suddenly over the heights just as we began the ascent, so that I saw nothing of the Pass at this time, but I had a good view of it when returning to Cape Town in June. The mountains are so tremendously steep that one wonders how a road up them could ever have been formed, and still more, that it cost only £3000. The road is narrow, but good, and its inclination so gentle, that a carriage may be driven down it at full trot with perfect safety; on one side (the right-hand as you ascend,) it overlooks a sheer precipitous descent of great height, and the parapet bordering this gulf is lower than would be at all agreeable to a nervous person. Before the construction of this road, the Hottentot Holland Pass or Kloof (note A) was one of the worst mountain-defiles in the colony, which is saying a great deal. Mr. Burchell and other travellers give a formidable description of its steepness and ruggedness. And as this is the only direct way from Cape Town to all the Caledon and Zwellendam country, and indeed to the southern part of the colony generally, Sir Lowry's Pass has been of very great benefit to the inhabitants. One of the Boers (farmers) of the interior told a friend of mine that this new road saved him a waggon per year. It is said that twice as much grain as formerly is now sown in the districts adjoining Sir Lowry's Pass, and twice as many waggons cross the mountain; and the toll levied here now amounts to £365 a year, being 12 per cent on the cost* of this most useful undertaking.

The Hottentot Holland mountains, like the generality of those in the Cape colony, are huge scarped masses of stratified sandstone, with very scanty vegetation (note B), but their outlines are remarkably fine. At the top of the pass, the rocks, shattered, and worn by the weather, exhibit a variety of strange fantastic forms, like ruined buildings, pillars, and colossal statues.

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* See a paper by Major Michell in the Journal of the Geograph. Soc. vol. 6. part 2.

From Sir Lowry's Pass the descent to Palmiet River is gradual, the road sandy and bad, traversing wide and open moors. Between Palmiet and Bot Rivers, (which last is the boundary of the Stellenbosch and Zwellendam districts,) we cross another mountain range, or rather another branch of the same range, known under the name of the Houw-Hoek. The road over this mountain, which may be considered a kind of continuation of, or supplement to, Sir Lowry's Pass, was the work of the same officer and the same government, and cost no more than £600*. It is hardly necessary to add that it is very well executed.

With the exception of this Houw-Hoek Pass, (and even this can hardly be called picturesque) the country that we traversed in this long day's journey, from the Hottentot Holland Mountains to the Zonder-einde (Endless River), was drearily monotonous; wide plains and low round hills, uniformly covered with stunted bushes, without trees or cultivation, offering nothing either to please the eye or excite the imagination. In truth, the same remark might be applied to a great part of the country between Cape and the eastern frontier. The want of verdure in the scenery of this colony generally, (though of course there are exceptions here and there,) is very striking; there is little grass, and most of the shrubs, which make up the great mass of the vegetation, have either leaves so minute, and of a substance so dry and juiceless, that they give no verdant or cheerful effect to the landscape, or else are covered with a whitish wool or down, which entirely hides the green. In this latter class is to be ranked the prevailing plant of all this part of the country, the *Rhenoster-bosch* or Rhinoceros-bush,† which literally covers leagues and leagues together in the districts of Zwellendam and George; it is a low, half-shrubby, grey, cottony plant, in form resembling a miniature cypress or juniper.

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* See the paper already quoted.

† *Stoebe rhinocerotis.*

The soil of all this tract is a very hard ironstone gravel; the road execrably rugged, in spite of the goodness of the material, for no care whatever is bestowed on it, and as it is generally on a slope, the rain water from the higher ground cuts furrows across it, which are deepened by every succeeding winter. The jolting occasioned by travelling in a horse waggon on such roads, is beyond all description; I despair of giving an idea of it to those who have never experienced the like; suffice it to say, that at the end of this second day's journey I ached in every joint and muscle from the shaking, and felt pretty much as Don Quixote is described as feeling after his adventure with the carriers. It is in crossing the deep gullies and dry torrent-beds, which are very numerous, that the jolting is most severe: the descent into these is almost always excessively steep and rough; arriving at the brink, the drivers put their horses to their speed, thunder down headlong into the ravine, and dash up the other side at the same pace with a prodigious uproar. In spite of the excessive discomfort of this mode of travelling, it is impossible not to admire the skill with which the Dutch farmers drive eight or ten horses in a team, at a smart trot and not unfrequently at a gallop. The office of coachman, however, is divided between two: the more important personage brandishes the immense bamboo-handled whip, near twenty feet long, which is the principal instrument of guidance; the other, usually a Hottentot, holds the reins.

What I have said of the roads and the jolting will apply to many of the succeeding days' journies, although this was, perhaps, the worst of all. Having enlarged on the subject in this place, I may avoid a repetition of the same remarks, so that it must not be supposed that the road was good because the contrary is not expressly stated.

Caledon is a neat village, situated at the foot of a rugged black mountain, and near it are hot springs, of considerable celebrity in the colony, issuing out of beds of brown ironstone. This, however, was not our resting-place; the governor, who rode at a pace which astonished the farmers, had stopped at Caledon, and after seeing whatever was to be seen there, had left it again before I reached it with the waggons. We went on to the house of the field-commandant Linde, on the Zonder-einde River, where I arrived thoroughly fatigued, having been thirteen hours in the waggon. The distance travelled this day was sixty-five miles.

March 24.—From hence we travelled for about three hours along the Zonder-einde River, a pretty stream, the course of which was easy to trace through the barren plain by the fresher vegetation on its margin. It runs eastward, and joins the Breede River, which we crossed in the course of the day, a little above the junction. The valley of the former river is bounded on the N. by a black wall of mountains, ranging from W.N.W. to E.S.E.; in other directions our view extended over wide dreary plains. It was in the course of this day's journey, near a house called Ecksteen's, that I first saw the white-thorned Acacia,* called by the colonists Doornboom or Wittedoorn, which in the more eastern parts of the colony is one of the commonest of plants, but does not approach nearer to Cape Town than this.

It is remarkable that Le Vaillant, when he travelled this way, not more than sixty years ago, saw large herds of Bonteboks and Hartebeests in this part of the country, near the hot springs (Caledon,) and the Zonder-einde River. At the present day, these quadrupeds are not to be met with except on the extreme limits of the colony, or beyond it. The famous Blue Antelope, which was supposed to have been peculiar to Zwellendam district, is now believed to be merely a variety of the Roan Antelope;† but whatever it may have been, it has long since disappeared; indeed, in Le Vaillant's time it was so rare that he never saw more than three specimens.

After crossing the rugged stony bed of the Breede River, in which at this time there was but little water, we approached the very picturesque range of the Zwellendam Mountains, which, furrowed with deep ravines and serrated with crags, rose in great majesty on the north. This chain, branching off from the great cluster of mountains near Worcester, and running at first S.E., takes a more easterly direction near the village of Zwellendam, and is continued under various names through the whole length of this district and that of George. It is separated by the valley of the Breede River from the mountains mentioned in the preceding page, which terminate near the confluence of that river with the Zonder-einde.

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* *Acacia horrida.*

† See Dr. Smith's Illustrations of South African Zoology. No. 12.

The village of Zwellendam, which stands just at the foot of the aforesaid mountains, is remarkably neat and pretty, composed of well-built white cottages, which are not crowded into a street, but stand far apart, among trim gardens, orchards, and groves of trees; so that though the population (as I was informed) does not exceed 2,100, the village extends above a mile in length. Here we were hospitably entertained by Mr. Rivers, the Civil Commissioner of the district. From Linde's to Zwellendam, is a nine hours' journey by horse-waggon, and may thence be estimated at 45 miles.

March 25.—As the 25th was Sunday, we remained quiet at Zwellendam, and I believe the whole party were glad of a day of rest; I am sure I was. After making up my journal, which had fallen into arrear, I walked out towards the mountains to botanize, and though, on account of the drought, I did not find many plants in flower, I had a very enjoyable ramble. Ascending the course of a clear stream, which flowed through a quiet little green valley (really green), I presently entered one of the wooded ravines of the mountains, where the vegetation was far more luxuriant than I had yet seen it in this colony, and even partook in some degree of a tropical character. A beautiful arborescent fern (Note C) put me in mind of Brazil. The stream, which flowed through this glen, was of that bright amber brown colour which one sees in the mountain rivulets of Scotland and Ireland, and ran sparkling among mossy rocks, under the shade of large trees. Undoubtedly the charms of the scene were heightened to me by the contrast with the two disagreeable and fatiguing days which had preceded. The weather too was delightful. Having ascended one of the underfalls or spurs of the mountains, I enjoyed an extensive view towards the south, though it could by no means be called beautiful. With the exception of the rugged mountains bordering the valley of the Zonder-einde River, which were conspicuous in the S.W., nothing was to be seen but open plains of a uniform dull brownish hue. The village, with its white houses and groves of trees, looked like an oasis in the desert.

March 26-27.—For the two next days we had the Zwellendam chain of mountains on our left-hand, our route being on the whole nearly paralled to it. The 26th, came a hard day's journey of ten hours, over an ugly, dreary country, strangely cut by deep water-courses, which were very troublesome to cross. In the course of the day we forded six different rivers; the first and largest was the Buffeljagts, a tributary of the Breede River, a rapid, clear, dark brown stream, showing by its wide bed of huge rolled stones what it must be in floods. Its banks are richly ornamented with the white-thorned *Acacia*, which, in its mode of growth and the colour of its foliage, much resembles our hawthorn as it appears in spring, when first coming into leaf. From hence eastward, this handsome shrub is very general along the banks of the streams, to which it gives a cheerful appearance that is strongly contrasted with the general character of the country; but in Zwellendam and George districts it occurs, as far as I observed, in such situations only; whereas, in the eastern part of the colony, and still more in Cafferland, it is universally diffused.

We afterwards crossed in succession the Slange, Duyvenhoeks, Krombeks, Vet, and Kafferkuyl rivers, and spent the night at Jan Dupré's farm near the last-mentioned. On the hills between these rivers I saw the first Aloes; that is to say, of the true Aloe kind; for what is commonly called the American Aloe is of another genus, (*Agave*) and very different in its properties as well as in the structure of the flower. The next day (March 27) I observed these plants in great abundance in the *Bush* country near the Gauritz river. This was a sort of country quite new to me, and might be considered as a foretaste of what we afterwards saw on an immensely larger scale in the eastern province. Here, in fact, a traveller proceeding eastward first meets with many of the singular forms of vegetation which characterize that province; such as the succulent, leafless, thorny *Euphorbias*, the *Spekboom*,[*] the *Boerboontjes*,[†] the *Najeboom*,[‡] of which I shall afterwards have occasion to speak more fully. Many of these forms do not occur again till we cross the Camtoos. The wild rough shrubbery of these plants, which forms a belt of some miles in width on both sides of the Gauritz, is much less dense than the eastern *Bush*; the soil appeared to be a crumbled shale or slaty clay. The Aloe previously mentioned[*] (see also Note D) is a strange uncouth looking plant, with its thick columnar stem, from five to ten feet high, crowned with a bunch of large, sharp, spear-like leaves, and clothed below with the black and rugged remains of its foliage. It is the most important medicinal plant of the colony; the people collect its leaves, and extract the juice by boiling till it is of the consistence of glue, in which state they send it down to Cape Town, and it forms a considerable article of export from thence to Europe. The estimated value of the exports of Aloes from the Cape, in one year, amounted to £2794.

The Gauritz, a considerable river, comes down from the Great Karroo, through a gap in the mountain chain which we had seen on our left since quitting Zwellendam, and separates the district of that name from George. It flows in a very deep, narrow, and steep-sided valley; and for some time before reaching the place where we were to cross, we could see the stream far below us, winding round the tongue of high land on which we were travelling: on our right-hand was a descent all but perpendicular, sheer down from the edge of the road to the river-bed, a depth of more than 600 feet. The place where we crossed, is called Helle Drift. Here we were met by a cavalcade of many of the principal people of George, headed by the Civil Commissioner, who came to welcome and pay their respects to the Governor. There was, however, no relay of horses for the waggons, and oxen were yoked instead; the consequence was, that we made very slow progress, and the whole day's journey, from Jan Dupré's to Hagel Kraal, occupied twelve hours.

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[*] *Portulacaria Afra.* [†] *Schottia speciosa.* [‡] *Cussonia spicata.*

[§] *Aloe ferox ?*

March 28.—On the 28th we crossed the mountains by the Attaquas Kloof, the least formidable, though not the most frequented of the various passes which lead across it, connecting the maritime portion of George District with the great valley called the Long Kloof. The Attaquas Kloof is, indeed, for the most part a good mountain road, though some portions of it are (or were at the time I speak of) very steep. It had been partly executed by Major Michell, who calculates that a further outlay of £300, with the employment of a small party of convicts, would complete all that is necessary to make it a safe and easy pass.* Indeed the natural obstacles do not appear so formidable here as in the case of the Hottentot Holland Kloof. There is no such mural barrier as there: the road winds among huge green hills, above which here and there appear rocky peaks; but there is nothing striking in the way of mountain scenery. From the heights the sea was plainly visible, being not more than twenty miles distant in a straight line, and in the opposite direction we had a good view of the Great Zwarteberg, or Black Mountains, a chain which runs nearly parallel to that we were now crossing. The day's journey, from Hagel Kraal to Saffraan Kraal (Raubenheimer's) at the northern extremity of the Kloof, was about twenty-four miles, which, as we were drawn by oxen most part of the way, took eight hours.

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* See the Paper previously quoted.

March 29 and 30.—On the two following days we (the waggon party) made short journeys, first to Roelof Kamper's, about three miles north of Cradock's Kloof, and next to the house of the younger Kamper, in the Long Kloof. From the former place, the Governor and most of the party set off to ride to the village of George, over Cradock's Kloof, a pass celebrated for its steepness and difficulty. I crossed it in returning to the Cape in June, and shall have an opportunity of describing it in another chapter. Between Saffraan Kraal and Groot Doorn River, (which latter flows from the mountains about the Cradock Pass, and joins the Olifants River) the country is of a *Karroo*-like character: it is destitute of grass, heath, large shrubs, and trees, but produces a great variety of low-growing succulent plants, of the genera *Mesembryanthemum*, *Euphorbia*, *Crassula*, and *Cotyledon*, thinly covering the hard dry ground. The soil appeared to be nothing but the superficial detritus of the soft shaly rock. There are ostriches on this Karroo, but we had not the good fortune to see any.

I ought to have mentioned, that Major Michell informed me, the Zebra is still found among the mountains near Attaquas Kloof, and he once saw four of them so far tamed by a colonist of the neighbourhood, as to be harnessed to draw a light waggon.

In these two days I had a tolerable opportunity of botanizing, but did not find much that was new to me. The country was of an extremely arid character, except along the course of the little streams (Note E); and on the hills near the younger Kamper's residence, the bushes have been burnt to a considerable extent, a practice general in this country, and advantageous to the cattle, but very provoking to a botanist. Here, however, was plenty of that curious plant called by the colonists *Paarde Kapok*,* or Horse-cotton, with its stem and flowers enveloped in a dense woolly coat of singular whiteness.

Our party re-assembled on the 30th at Kamper's, but Major Michell left us to return to England, to my regret, for I had found him a very agreeable travelling companion, full of knowledge relating to the country and its productions, and most obliging in communicating the information he possessed.

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* *Lanaria plumosa*, Linn. *Argolasia lanata*, Juss.

March 31.—A wearisome journey of eleven hours and a half brought us from hence to the house of the Field-Commandant, Rademeyer, in the middle of the Long Kloof, where we spent the next day, being Sunday. This Long Kloof, which took us two long days to travel through, is a narrow and rather elevated valley, running from W. to E., bounded on the N. by a chain of hills running parallel to the great Zwarteberg; on the S. by the range of mountains, which I have already often mentioned, and which runs eastward through the whole length of Zwellendam and George districts, and a part of Uitenhage, ending at the Kromme river. Some general and comprehensive name is very much wanted for this important chain, which is known in various parts as the Zwellendam, the Auteniqua, and the Zitzikamma mountains. In the 'Encyclopædia of Geography' it is erroneously called the Langekloof, a name which belongs to the valley, and not to the mountains that bound it.

This long valley, although crossed by numerous streams, is on the whole of a remarkably arid and monotonous appearance. Indeed, short of actual desert, I can hardly imagine any thing more wearisome: not a tree, not a house or trace of cultivation for miles together; scarcely a bush above three feet high; nor a tinge of green, except along the margins of the streams, whose course is indicated by a narrow stripe of reeds and rushes. A great part of the ground is covered exclusively with the melancholy grey Rhinoceros-bush. The mountains on the south are extremely steep and rugged, rising into a number of sharp pyramidal peaks, and would be picturesque if set off by a tolerable foreground; but without this they are too barren and savage for beauty; as their flanks exhibit nothing but naked, grey, stratified rock, like the cliffs of Table Mountain, without a tree or a blade of grass. The streams, as I have said, are numerous, and though small are never entirely dried up, so that it surprises one to see their fertilizing influence extend so little way. An industrious and enterprizing people would have turned them to good account in irrigating the land. As it is, I travelled through the Long Kloof at two different seasons, and both times it appeared equally barren. Yet, in a modern work on the British Colonies,* this is termed a delightful valley! Le Vaillant, on the other hand, seems to have been as little delighted with it as I was, for he calls it a "valley of desolation." It must be owned, however, that it possesses an advantage of which not every part of the colony can boast; namely excellent water.

The streams of the Long Kloof flow northward, and fall either into the Kammanassie or the Kouga, with one exception, the Keurbooms River, which finds its way to the South through a narrow break in the mountain chain, and discharges its waters into Plattenbergs Bay. It divides the Long Kloof in a manner into two parts, of which the eastern is the more elevated. The Keurbooms is but a small stream where we crossed it, but the ascent from it to the higher ground is tremendously steep and rugged; it is astonishing how any horses can drag a waggon over such places, and how any combination of wood and iron can stand such jolts. The lower part of this hill was covered with beautiful Proteas, in full bloom, at the time I speak of, and higher up I saw abundance of large Aloes.

April 1.—The Sunday we spent at Rademeyer's was intensely hot, yet I employed myself some hours in botanizing, though with very poor success. A large part of the surface of the hills had been ravaged by fire, so that nothing remained but charred leafless sticks; and where this was not the case, there were very few plants in flower. Those which I observed were principally of the fleshy or succulent tribes, which delight in the most parched, barren, and rocky situations. Here also I saw an Antelope of that very pretty and graceful species known by the name of Steenbok, which lives among the rocks and stones on these barren hills.

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* History of the British Colonies, by Mr. Montgomery Martin.

Our host, Rademeyer, had distinguished himself by a very gallant action in the late Caffer war, of which I heard the following account. He had penetrated, with about forty of his countrymen, into a very narrow ravine in the Fish-River Bush, when his little party was suddenly attacked and almost surrounded by a very superior force of Caffers, who not only assailed them with missile weapons, but, confiding in their own numbers and in the effect of the surprise, charged them with much greater resolution than usual. The Boers, excellent at long shots, but not so fond of close fighting, were giving way, and, in attempting to effect a retreat, were falling into confusion; Rademeyer suddenly threw his hat on the ground, and vowed that he would not retreat an inch farther; and rallying his men, he made them draw up in a close circle, facing the enemy on every side. In this situation, animated by his example, they kept up such a fire as to repulse the Caffers with heavy loss. Such is the account I received, in the colony, of this exploit; and it agrees in the main with that given in the United Service Journal; but the "Narrative of the Kafir War," published by the editor of the Graham's Town Journal, relates the affair differenlty, assigning the credit of it rather to the party of Boers in general than to Rademeyer in particular.

April 2.—From the eastern extremity of the Long Kloof, (which is not indicated by any distinct natural limit,) the ground falls considerably to the source of the Kromme River, where we enter the district of Uitenhage. We were met here by Captain (now Sir Andries) Stockenstrom, who was at that time Lieutenant Governor of the Eastern Province; and in company with him we went on to Meeding's or Jagersbosch, about forty-four miles from our last station. The narrow valley of the Kromme River, in which this place is situated, is not much superior in appearance to the Long Kloof, and is bounded, like that, by rugged, stony, and barren hills. Here we remained two days, for it rained hard all the 3rd, and though the 4th was fine, yet the swollen state of the river barred our progress. The people at

Jagersbosch said that they had had no such rain for the last two years. We were lucky to be caught by it in such good quarters, for the house was a comfortable one, and our hostess, Mrs. Meeding, a jolly, good-humoured, hospitable woman, who laughed vociferously at every thing, and at nothing.

April 4.—I spent the 4th very pleasantly in rambling over the hills near Jagersbosch, among which I found some pretty and romantic nooks, though the general aspect of the country is very uninviting. I was much struck with the appearance of one of these secluded hollows, which was as pleasingly wild and picturesque a spot as any I had yet seen in the colony; a deep, still, dark pool of water reflected with the most perfect distinctness the high and shattered walls of sandstone rock by which it was almost enclosed; these rocks, broken in some places into the likeness of rude steps, were adorned with tall Aloes, with the large palm-like leaves of the *Zamia* (Note F), or Caffer-bread, and with a variety of heath-like shrubs; the rugged hills seemed to close in upon the narrow ravine which formed the only outlet to this hollow; nowhere could be discerned a trace of the presence or operations of man. No doubt this scene which made so much impression on me, like a green spot in a desert, owed a good part of its charm to the force of contrast.

The hills near Jagersbosch abound with the small tree called *Wagenboom*,* which was indeed common in many parts of the country we had traversed, but this was the first time I saw it in flower. It is one of the largest kinds of *Protea*, for though it does not attain such a height as the Silver-tree, it is fully as thick in the trunk; its flower-heads, of a delicate straw-colour, measure five inches across; its peculiarly grey foliage, and crooked and twisted mode of growth, give it a certain general resemblance to the Olive-tree. Its name is derived from the use made of its wood, for waggon-wheels and the like. A beautiful Sugar-bird,† of a golden green colour, with a scarlet breast, was here perching on its flowers, climbing about them and thrusting his slender beak into every floret.

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* *Protea grandiflora.*

† *Le sucrier à plastron rouge*, of Le Vaillant.

The moist hollows between the hills, as well as the valley of the Kromme River, were nearly filled with the *Palmiet rush*,* a common plant throughout the country we had traversed, from the Hottentot Holland mountains eastward. It is eminently a social plant (to use Humboldt's expression), growing very thick together, and forming large masses, unmixed with any thing else. In its herbage and general appearance it is quite unlike a rush, and has more the look of an Aloe, or of the crown of a Pine-apple mounted upon a thick, black, spongy stem, which varies in height from less than one foot to three or four, according to the depth of the water in which it grows.

April 5.—Leaving Jagersbosch on the 5th, we travelled for some hours along the valley of the Kromme River, which well deserves its name (signifying crooked), for it winds so much, that we had to cross it half a dozen times in the course of the day's journey; the last time the water was up to the floor of the waggon. Afterwards, quitting this river, we traversed a country more elevated, open, and comparatively level, but intersected by two or three formidable ravines. A journey of between seven and eight hours from Meeding's brought us to Leeuwenbosch, a poor miserable house in a hideous country, where, a few months afterwards, I had the misfortune to be detained a whole day by rain.

April 6.—A considerable number of *Fingoes* were hutted near this farm-house, and in the morning the Governor held a conference with them by means of an interpreter. These were the first people of Caffer race that I saw, being the remnants of several tribes which had inhabited the country near Port Natal, but had been exterminated or driven into exile by Chaka, the terrible chief of the Zooloos. Of those whom we met here some were under the middle size, others considerably above it, slenderly but actively made; their colour not quite black, but a very dark umber-brown, totally different from the dirty yellowish-brown of the Hottentots, to whom, indeed, they have no resemblance, except in the woolly hair. They were, however, considerably inferior in personal appearance to the Caffers whom we afterwards saw; the women in particular were far from prepossessing. Some of the men wore English clothing, which had been given them as a mark of favour or distinction, but the greater part had nothing but the sheep-skin cloak or *kaross;* the women wore the same kind of cloak and a scanty petticoat. I shall treat more fully of the Fingoes in another chapter.

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* *Juncus serratus.*

From Leeuwenbosch we travelled in a S.E. direction, over an open and uninteresting country, to the Camtoos River, which we crossed by a floating bridge, a little above its mouth. This is one of the largest rivers in the colony; yet it is only after receiving the waters of the Kouga from the Long Kloof, that it becomes a perennial stream. At the time of Thunberg's travels (1773) the Camtoos was the eastern limit of the colony, and the country immediately to the east of it was inhabited by the Gonaquas, a mixed race, now extinct. It is likewise mentioned with honour by Le Vaillant, who spent some time on its banks, and met with many animals which he had not previously seen. At the place where we crossed it, the Camtoos is 220 yards wide, (as I was informed by the ferryman) and its waters are beautifully clear; a chain of wooded hills runs along its left bank. As soon as we cross this stream, a remarkable change takes place in the appearance of the country, which, from thence to Van Staaden's River, is really pretty, with a pleasing variety of hill and dale, and great masses of evergreen wood, or rather shrubbery, with broad grassy lawns between. Here begins the proper region of the *Spekboom,* the *Boerboontjes,* the succulent *Euphorbias,* and many other curious shrubs, which may be considered characteristic of the Eastern Province, though a detachment (as it were) of them is found on the banks of the Gauritz.

After a journey of forty-five miles from Leeuwenbosch, we arrived at the brow of the tremendous hill overlooking Van Staaden's River. The deep and narrow valley through which this little stream finds its way to the sea, is quite a gem compared to the general scenery of the colony, and really puts one in mind of some of the smaller valleys of Switzerland: it is beautifully verdant, partly cultivated and partly in pasture, enlivened by a cluster of uncommonly neat, white, farm buildings, and hemmed in by mountains, not indeed of great height, nor of very bold outlines, but excessively steep, and richly clothed with thick evergreen woods. The descent from either side is formidably rugged, abrupt, and difficult, beyond any thing else of the kind that I saw in this Colony, with the single exception of Cradock's Kloof.

April 7.—On emerging from this valley we left all the beauty of the country behind us, and proceeded across a naked arid plain to Port Elizabeth, which has itself nothing prepossessing in its appearance. Here we found the first inn on this side of Sir Lowry's Pass, and the first military post between Cape-Town and the frontier. A detachment of soldiers was drawn out to receive his Excellency with due honour, but its appearance struck me as somewhat grotesque; the men were of the Hottentot or Cape Corps, little, wizened, monkey-faced, mean-looking fellows, like baboons in uniform, but commanded by a very tall English officer, who looked as if he would have outmeasured his whole detachment put together.

April 8, 9.—We remained two days at Port Elizabeth, where the Governor received a deputation of the inhabitants, and transacted other business. I was not much pleased with this part of the Eastern Province. It is an ugly, dirty, stinking, ill-built hamlet, resembling some of the worst fishing villages on the English coast: backed by low stony hills of the most barren character, while long ranges of sand-hills extend along the shore on both sides of it. Yet it is a place of considerable commercial importance, being the only sea-port of this prosperous and improving division of the colony. In the year I was at the Cape, the value of the exports from Port Elizabeth (of the produce of the colony) amounted to £39,768; the declared value of the goods imported into the same place in British shipping was £103,077. The anchorage of Algoa Bay is quite open to the S.E. winds, and has been generally supposed to be dangerous; but I was assured by more than one naval officer at the Cape, that it is not unsafe for well-provided vessels, if proper care be taken. The landing, however, is bad, and often impracticable, on account of the heavy surf, and a pier or jetty is much wanted. It is proposed also to erect a lighthouse on Cape Recif, which bounds the bay to the south-west.

This unpromising neighbourhood produces many curious plants, particularly of the fleshy kinds. *Aloes* of several species, *Crassulas* and *Cotyledons* with fine scarlet flowers, and *Euphorbias*, whose fluted columnar stems are beset with formidable prickles, flourish in the crevices of the sandstone rocks and among loose fragments of stone, exposed to the full glare of the sun. In company with these are some beautiful Everlastings, and various plants (Note G), of a hard, rigid, stunted character, but with handsome blossoms. The sand-hills along the coast are partially covered with dwarfish evergreen bushes, seldom more than three feet high, intermixed with succulent plants of the strangest shapes. The *Boerboontjes*,* with its hard, knotty, twisted branches, its scanty dark green foliage, and brilliant carmine-coloured flowers, is plentiful here, but in the form of a low scrubby bush, whereas on the banks of the Camtoos it grows to the size of an apple-tree. It is a very general plant in the Eastern province. The little stream which comes down to the sea at Port Elizabeth is covered with beautiful blue water lilies.

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* *Schottia speciosa.*

There was at this time a kraal of Fingoes near the port, and we were told that the inhabitants found them very useful as servants and labourers.

April 10.—From this place, turning from the N.W., we proceeded over dreary plains to Uitenhage, only nineteen miles distant. The little village of Bethelsdorp, where we stopped for a while on our way, is one of the oldest missionary establishments in the colony, (except those of the Moravians,) and the first that I had seen. It appeared to be thriving and in good order, and made an agreeable impression on me, though the situation is unfortunate, the soil being so barren that no gardens can be cultivated. There were at this time nearly twelve hundred coloured people, (Hottentots, Bastaards, and others,) on the books of the institution, but scarcely half the number are resident. They are all taught some trade or useful employment, and go into the service either of the farmers, or of tradesmen at Port Elizabeth and Uitenhage. Those who remain at Bethelsdorp live in decent cottages of their own building. We saw the Infant School, which, as far as could be judged by a single visit, seemed a well-managed and useful institution : the children were very perfect in their lessons, looked clean and cheerful, and appeared to be as well taught as any poor children of their ages in England.

The town, or rather village, of Uitenhage, had a very pleasing appearance when we first caught sight of its bright white houses spread over a fertile valley, surrounded by wooded hills of various elevations; nor was this agreeable impression dissipated when we entered it. A large party of the inhabitants, with the Civil Commissioner and other public functionaries at their head, came out on horseback to meet the Governor, and saluted him, after the colonial fashion, with repeated discharges of their muskets.

April 11.—We spent the next day (an exceedingly hot one,) at Uitenhage, which is one of the most agreeable places in the colony. Though called a town, it has the appearance of a large rural village; its houses, which are (almost without exception) neat and well-built, and of the most cheerful appearance, are placed at some distance apart from one another, with well-stocked gardens, orchards, and green fields intervening. There is scarcely a sign of poverty to be discerned in the whole place. It enjoys also the advantage (inestimable in this country) of a copious and never-failing supply of good water. The surrounding country, though not beautiful, is certainly pleasing. The Zwartkops, which flows near the town, is a beautiful little river, slow, still, and clear, winding gracefully through the valley, and fringed with thickets of tall reeds, fern, Acacia (Note H), and a pretty kind of willow. High and broken banks of red clay rise immediately behind these thickets, on the S. side, and set off their delicate verdure to advantage. The surface of the river is most beautifully decorated with a profusion of the sky-blue water-lily,* one of the loveliest plants of Southern Africa. On each side of the valley are steep but rounded clay hills, covered with the succulent and thorny bushes which characterize this part of the country.

The inn at Uitenhage is by far the best I met with in the colony.

It was proposed by the late Governor of the Cape, Sir Benjamin D'Urban, to remove the seat of government to this place from Cape Town, a measure which would certainly be attended with many advantages, now that the Eastern province is become the most important part of the colony, and that which most requires the constant and vigilant superintendence of the authorities. But the dissatisfaction which this scheme created at Cape Town, probably caused it to be laid aside. At any rate, however, Uitenhage seems to have a better claim to be the metropolis of the Eastern province than Graham's Town, which is too far from the port, and too much within the reach of the Caffers in case of a war.

April 12.—The 12th was another burning day. We travelled from Uitenhage north-eastward to Addo Drift, on the Sunday river, 25 miles over a hilly country, covered for the most part with low but thick "bush;" the soil a hard clay. Though the appearance of this kind of country is in some degree monotonous, yet its varied and singular vegetation is very attractive to the eye of a naturalist. The strange, stiff, gaunt forms of the leafless Euphorbias, which suggest the idea of some monstrous Indian idols; the Aloes, with their spear-like leaves, and tall scarlet spikes; the pale green foliage of the *Spekboom*,* which is said to be the favourite food of the Elephant; the *Crassulas,* covered with milk-white blossoms; the *Cotyledon*, with its bluish leaves and bright red flowers; the scarlet Geraniums peeping from amidst the other shrubs, altogether form a combination extremely interesting to a botanical eye, and which must strike every traveller of ordinary habits of observation, by its dissimilarity to any thing that is to be seen in other countries. There cannot indeed be a vegetation more peculiar or of a more marked character.

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* *Nymphæa scutifolia* DeC. *N. cærulea* of the Bot. Mag.

This tract of bush is of great extent; from the Van Staaden's mountains, on the S.W. of Uitenhage, it stretches, with few breaks, by the Sunday and Bushman's rivers, and the Zuureberg, to the banks of the Fish river, along both sides of which it forms a belt of several miles in width.

We passed the night at a very small but not uncomfortable inn, kept by an Englishman, on the right bank of the Sunday river. This house was attacked during the late war on the frontier, by a party of Caffers, and the marks of the *assagais* which they threw, are still visible on the door-posts and window-sills. The innkeeper told us that he had had several horses eaten by lions quite lately, and that there were buffaloes also in the neighbouring "bush."

The Sunday river is here a strong and very muddy stream, flowing in a deep channel, with high broken cliffs, (apparently of clay and sandstone,) ranging along its right bank. It is subject to great floods, and has been known to swell above these cliffs, and overflow all the surrounding country. It rises in the Sneeuwbergen, about 32° S. lat., flows by Graaff Reynet, and across the easternmost part of the Great Karroo, and falls into Algoa Bay.

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* *Portulacaria Afra.*

April 13.—For several miles E. of the Sunday river, the country is hilly and rather picturesque, and entirely covered with very thick bush, of much taller growth than what I had previously seen, though of the same nature. Most of the shrubs here exceed the height of a man, and there are plenty of trees, though not of great size. Trees and shrubs alike are loaded in a strange way with a whitish thready Lichen,* hanging down in tangled bunches of extraordinary length. It is the very same which encumbers in a similar manner the scattered trees on the Campas of Brazil. In this day's journey I first saw the beautiful, glossy, dark-green Starling which Le Vaillant calls *nabirop* and which is abundant on the Caffer frontier. This tract of bush near the Sunday river, is called the Addo or Adow bush. From the high grassy table-land beyond it, known by the name of the Addo heights, we saw distinctly, though at a distance of more than 50 miles, the bold outline of the Wintershoek or Kuruka mountain, which is a conspicuous object from Algoa Bay, and by reason of its isolated situation and remarkable form, constitutes a good landmark for ships. The sailors call it the Coxcomb mountain, a name which gives a good idea of its outline. We saw it first from near the Camtoos, and had had it more or less in view every day since we crossed that river.

Traversing the Quagga Flats, wide, open, grassy plains which formerly abounded with various kinds of the larger game, we reached the Bushman's river, the boundary of Uitenhage and Albany, where we spent the night at a comfortable little inn. There is some bush, and (April 14) rather pretty scenery, in the neighbourhood of the river; to which succeed huge, green, treeless, round-backed hills, almost mountains in point of magnitude, but utterly unpicturesque.

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* *Usnea florida* and *plicata*.

Such is the character of the country for many miles before we reach Graham's town. This tract is excellent for feeding sheep. We breakfasted at the house of Mr. Daniells, the greatest and most successful sheep-farmer in the colony; the land which he occupies was previously supposed to be worthless, but has been rendered extremely valuable by his skill and perseverance. All his sheep are Merinos, which are found to be not only infinitely more profitable, but at the same time more hardy than the Cape breed.

It is said that a few of the first Albany colonists, in 1820, brought fine woolled sheep with them, and that Lord Charles Somerset, when Governor, was very anxious to encourage the importation of a superior breed of these animals; but the subject was not taken up in earnest, till several years afterwards. Mr. Daniells was one of the first who devoted any attention to the growth of fine wool, an object now pursued by a great many of the colonists of Albany. The first considerable export of wool from Algoa Bay, took place in 1830,* since which time this branch of industry has made rapid progress, and it is to be hoped that the wool of the Cape may eventually vie with that of Australia.

At Mr. Daniells' I saw a tame Springbok, one of the most graceful and beautiful creatures it is possible to conceive. This species of antelope is still found on the Quagga Flats, though much less common than formerly.

We reached Graham's town in the middle of the day, and His Excellency was escorted into the town by a numerous cavalcade of the inhabitants. The distance of this place from Cape Town is about 600 miles, which we had accomplished in seventeen days, not including those during which we remained stationary.

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* See "Narrative of the Kafir War," Introduction, Part 2.

NOTES TO CHAPTER III.

(A) It may be well here to explain the meaning of those local terms which occur most frequently in a narrative of any tour in the Cape colony.

Kloof, is generally applied to a mountain pass, a ravine, or narrow lateral valley among mountains ; the " Long Kloof" is the only instance that I know where it is given to a longitudinal valley.

Kraal, is properly an enclosure for cattle, answering to the Spanish and Portugueze word *corral ;* it is commonly applied to the villages or settlements of the natives.

Hoek, a corner ; land enclosed in the bend of a river, or between a river and the sea, or between two converging ranges of mountains.

Drift, a ford.

Kranz, a cliff or precipice.

Kop, a head or peak.

(B) When I returned to the Cape in June, some beautiful plants were in blossom on the mountains of Hottentot Holland and Houw-Hoek ; in particular, *Protea longifolia*, *P. Lepidocarpon*, *P. tenuifolia*, *Serruria clavata*, a short-leaved variety of *Erica Plukenetii*, with very rich coloured blossoms, *Septas Capensis* (in great profusion), and *Polylobium involucratum* (Ecklon and Zeyher.)

(C) This arborescent fern is *Hemitelia Capensis*, the largest and most beautiful fern that is known in the Cape colony, though inferior in size to several of the South American and Indian species, as it does not exceed the height of twelve feet. It is not peculiar to Zwellendam (though that was the first place where I saw it), but grows also in some of the ravines on the eastern side of Table Mountain, and I believe in other places.

Besides this I gathered near Zwellendam, *Weinmannia trifoliata*, *Brachylæna neriifolia* De C., *Knowltonia rigida*, *Erica Caledonica* Benth., *Hydrocotyle calliodus* De C., *Helichrysum parviflorum* De C., *Osteospermum triquetrum* De C., and a singular species of *Muraltia*, which appears to be undescribed ; but the season was nearly the most unfavourable of the whole year for botanical pursuits.

(D) I believe that this plant is the *Aloe ferox* of Haworth and other authors, but the accounts which have hitherto been published of the larger species of this genus are very unsatisfactory ; they have been taken from cultivated plants, and accordingly importance is often attached to circumstances which are seen to be insignificant when we come to examine the plants in a state of nature. Thus, all the writers who have distinguished *Aloe ferox* as a species, have laid much stress on the presence of prickles on *both* sides of its leaf ; but this is an extremely variable character ; in the wild plant, prickles are sometimes (not very often) found on both sides of the foliage, more frequently on the under surface only, and very often at the margin only. The edges are always prickly, but the prickles vary in direction even on the same leaf. The stem is thick, rarely branched ; the outline of the leaves nearly lanceolate, their colour glaucous, their direction spreading, not recurved ; the flowers are of a very rich orange-red (different from the coral-red of *Aloe arborescens*), closely crowded, forming extremely thick and long spikes, with the stamens projecting considerably beyond the petals. These flowers contain much honey, and the leaves, when broken, discharge a great quantity of an excessively bitter, deep yellow, transparent juice.

It is very much to be wished that some botanist, residing for a considerable time in Southern Africa, should devote his attention particularly to the *succulent* genera of plants, such as Aloe, *Mesembryanthemum* and *Euphorbia*, which have as yet been studied only in our green-houses, and which, as they cannot be preserved by drying, ought to be be described and drawn in the living state.

(E) A large and beautiful species of Everlasting (*Helichrysum fœtidum* De C.), bearing a profusion of golden yellow flowers, is common on the edges of streams in the Long Kloof, in company with the graceful and pretty *Gnidia oppositifolia*, and a great variety of *Restiaceæ*. In most of these streams there is abundance of our common Reed-mace or Bull-rush (*Typha latifolia*) ; this well known European plant was supposed by Thunberg to be merely naturalized in the Cape colony, but it appears to me utterly improbable that it should have been introduced, either by accident or design, into the waters of these wild and thinly inhabited tracts.

On the arid and stony hills which border the Long Kloof, I met with a curious species of Heath, the *Erica Solandriana* ; likewise *Helichrysum cymosum* De C., *H. paniculatum* De C., *H. anomalum* De C., *H. nudifolium* De C., and *Lanaria plumosa* ; but by far the most abundant plants at this season were various kinds of *Restio*, which have very much the appearance of rushes. *Metalasia muricata* De C. is extremely common in the Long Kloof, and, indeed, throughout the districts of Zwellendam and George.

(F) This place, situated about six degrees east of Cape Town, seems to be pretty nearly the westernmost limit, in South Africa, of the geographical range of the curious genus *Zamia* ; at least I never saw nor heard of any species farther to the west. The *Zamias* are among the forms of vegetation which characterize the eastern part of the colony, and especially the great tract of thicket, or *bush*, extending along the Caffer frontier. But the species which I saw at Jagersbosch was different from that which is most common in the Fish River Bush : the latter (*Zamia horrida*) is about three feet high, its leaves very glaucous, and every leaflet of them armed with two or three strong and sharp spines ; the other is considerably larger, its leaves dark green, the leaflets much longer and narrower than those of the *horrida*, and without spines at the edges.

The presence of these singular plants, which resemble Palms in the form and appearance of their leaves, without being really allied to them, constitutes one of the points of resemblance between the botany of Australia and that of Southern Africa. The species belonging to the two continents are indeed distinct, yet very similar in structure. But some of the Australian *Zamias* are said to grow to the height of nearly thirty feet, whereas the larger of the two kinds that I saw did not exceed five feet. The stem is very thick, and (in *Z. horrida* more particularly) has a tesselated appearance from the scars of the old leaves.

Besides this I gathered on the hills near Jagersbosch the following plants :—

Leucospermum attenuatum.
Erica curviflora.
E. elongata.
Priestleya hirsuta.
Lanaria plumosa.
Pteronia acerosa De C.
Heteromorpha arborescens De C.
Pelargonium cortusifolium.
Aspalathus, sp.

(G) At the time when I was there, the environs of Port Elizabeth were very barren of plants, with the exception of the succulent kinds, which will bear almost any degree of heat and drought. The principal rarities which I noticed were *Helichrysum xeranthemoides* De C., (a beautiful Everlasting with bright carmine-coloured and white flowers) *Nemesia linearis*, *Barleria pungens* Spr. (which is Harvey's *Crabbea pungens*). *Aspalathus adelphia* E. and Z., *Tulbaghia violacea.*

(H) The *Acacia Caffra*, a much handsomer tree than the *horrida*, appeared for the first time on the banks of the Zwartkops, but I saw it afterwards in far greater abundance on the rivers of the Caffer frontier, (the Great Fish River, the Kat, Koonap, and others,) where it grows to a very large size, and has a beautiful appearance. Its leaves are most delicately feathered, and its flowers form long spikes of a fine sulphur colour.

A beautiful *Loranthus* (*L. glaucus*), with flowers shaped somewhat like those of a honey-suckle, but of a most vivid orange-scarlet, grows parasitically on the branches of the Acacias near Uitenhage, and in several parts of the *bush.*

The beds of loose shingle which have been left in some places by inundations of the Zwartkops, abound with the *Gomphocarpus fruticosus*, a tall half shrubby plant, with willow-like leaves, white flowers, and large, inflated, prickly pods ; it is common in similar situations about most of the rivers of the Eastern Province, and as far west as the Gauritz ; and is sometimes cultivated in gardens at Cape Town, where it is called the flowering willow.

Mr. Zeyher, a most acute and indefatigable botanical collector, who resides near Uitenhage, has found a vast number of new and curious plants on the banks of the Zwartkops River, and in the bush country beyond it.

(I) Besides those which I have enumerated in the text, the following may be mentioned as some of the most characteristic plants of the bush :—

Pelargonium peltatum.
Rhigozum trichotomum, Burch. (chiefly near the Fish River.)
Grewia flava, De C.
Plumbago Capensis.
Senecio longifolius, De C.
Arduina bispinosa.
Tecoma Capensis (especially beyond the Fish River).
Hamiltonia Capensis, Harv.
Belonites bispinosa, E. Mey.
Crassula perforata.
Kalanchoe sp.

(To be continued.)

XIV.—CONTRIBUTIONS *towards a* FLORA *of South America,* —*Enumeration of Plants Collected by* MR. SCHOMBURGK, *in British Guiana.*—By GEORGE BENTHAM, ESQ., F.L.S., &c., &c.

(*Continued from Vol. IV. page* 323, *of Hook. Journal of Botany.*

EUPHORBIACEÆ.

(*Determined and described by* DR. KLOTZSCH.)

Tribe EUPHORBIEÆ.

694. Euphorbia (* Floribus solitariis, †Procumbentes, stipulis intrapetiolaribus) *dioica,* (Kunth Nov. Gen. et Spec. II. p. 43.) fruticulosa, diffusa, procumbens, ramis subvillosis, foliis oppositis oblique subcordato-ovatis brevi-acutis apice dentato-serratis utrinque pilosis, involucris axillaribus solitariis turbinatis pilosis brevi-pedicellatis folio duplo brevioribus, limbo quinquefido, laciniis roseis crenato-laciniatis, capsulis pilosis brevi-pedicellatis, stigmatibus tribus filiformibus apice brevissime bifidis.—E. multiflora *Herb. Willd. n.* 9291.—Sandy barren spots, British Guiana, *Schomburgk, n.* 172. This species is certainly monœcious, and differs only from E. rosea *Retz,* an East Indian plant, by having the capsules covered with hairs.

695. E. (** Floribus aggregatis, † Erectæ β Stipulatæ) *pilulifera, Linn. Syst. Veg. ed. Roem. II. p.* 441. E. globulifera *Kunth. Nov. Gen. et Sp. II. p.* 45.—Savannahs, British Guiana, *Schomburgk, n.* 619.

696. E. (Aggregatæ, Erectæ, Stipulatæ,) *hypericifolia Linn.* var. *falciformis Klotzsch,* glabra, ramis gracilibus dichotomis in apice floriferis, foliis oppositis oblongis aut lineari-falcatis brevi-acutis obsolete serratis basi oblique cordatis evanescente sparsim pilosis, superioribus angustioribus et plerumque integerrimis, involucris cyathiformibus glabris in apice ramulorum binis rarissime solitariis, limbo quadridentato extus

triglanduloso, capsulis glabris, stigmatibus tribus filiformibus bifidis.—Gracilis sesquipedalis, erecta. Folia $\frac{1}{2}$—$1\frac{1}{2}$ unc. longa, 1-3 lin. lata.—British Guiana, *Schomburgk, n.* 73. French Guiana, *Herb. Par. n.* 203, 204.

697. Dalechampia *scandens. Linn. fil. Mant. p.* 496—British Guiana, *Schomburgk, n.* 610.

698. D. *guianensis* (Klotzsch, sp. n.) caule villoso scandente, foliis cordatis profunde tripartitis remote serratis supra sparsim subtus præsertim in nervis dense pilosis, lobis oblongo-lanceolatis exterioribus basi rotundato-dilatatis approximatis, stipulis lanceolatis integerrimis, bracteis involucrantibus profunde trifidis obtuse spinuloso serratis, lacinia media longiore.—British Guiana, *Schomburgk.*

699. D. *heterophylla Poir. Dict.* x. *p.* 447.—D. serrulata *Herb. Willd. n.* 17799, calycibus fœmineis 12-partitis. French Guiana, *Leprieur, Herb. Par. n.* 201, 202.

Tribe PROSOPIDOCLINEÆ. *Klotzsch.*

Ovarii loculi uniovulati. Involucra subgloboso-vesicæformia hinc hiantia, deinde plus minus explanata, demum decidua, 3, 4-v. 6-flora, bracteis suffulta. Flores dioici, apetali.

700. Schismatopera *distichophylla* (Klotzsch, gen. nov.)—Spixia distichophylla *Mart. in herb. Monac.* ad partem.—On the Rio Negro, *Schomburgk n.* 918, *Martius.*

Char. gen. SCHISMATOPERA. Flores dioici. Involucrum coriaceum subgloboso-vesicæforme, pubescens, tri-raro quadri-florum, hinc hians, demum explanatum, subbivalvatum, ad basin bractea persistente solitaria convexa instructum. Masc. Pedicelli antheriferi tres, cylindrici aut subulato-arcuati, basi calycibus brevibus trifidis aut tripartitis extus villosis cincti, apice antheris 8 aut 4 oblongis brevi-filamentosis erectis coronati, antheris lateralibus extrorsis, loculis per rimam longitudinalem dehiscentibus. Ovarii rudimenta 3, trigona, hirsuta, vertice stigmatibus trilobis magnis applanatis sessilibus instructa, in ambitu florum masculorum posita. Fœm.... —Arbores Americæ tropicæ, 8-12-pedales, ramosæ. Rami teretes, cortice cinereofusco. Folia magna, coriacea, disticha, oblongo-elliptica, glabra. Flores axillares brevi-pedunculati. Pedunculi squamati aut nudi.—S. *distichophylla* (Klotzsch), pedicellis antheriferis cylindricis subbrevibus octandris, pedunculis squamatis.

701. Peridium *bicolor* (Klotzsch sp. n.) foliis magnis ellipticis brevi-acutis supra glabris nitidis atro-viridibus subtus cum petiolis ramulisque junioribus et involucris densissime minute-lepidotis sordide flavidis, ovariis villosis, stigmatibus obtuse trilobis.—Folia coriacea, integerrima, 4 unc. longa, 2 unc. lata.—British Guiana, *Schomburgk*, *n.* 114.

Char. reform. gen. PERIDIUM, Flores dioici. Involucrum globoso-vesicæforme, lepidotum, antice rima apertum, cæterum undique clausum, extus bracteis duabus oppositis inæqualibus persistentibus suffultum. Masc. Stamina 12-16, receptaculo communi inserta, extus bracteis 3-4 parvis cincta: antheræ terminales, oblongæ, biloculares, loculis marginalibus per rimam longitudinalem dehiscentibus; filamenta erecta, compressa, glabra; ovarii rudimenta nulla. Fœm. Ovaria 4, turbinata, brevi-pedicellata, trilocularia, loculis uniovulatis, ovulis pendulis. Stylus brevissimus, teretius culus deciduus; stigmata triloba. Fructus capsularis, epicarpio corticato trivalvi, valvulis bifidis intus tricoccis, coccis spongiosis bivalvibus monospermis. Semina pendula, obovata, arillo membranaceo instructa, testa atra nitida crustacea. Embryonis exalbuminosi orthotropi cotyledones carnosæ, plano-convexæ. Radicula umbilico proxima, supera. —Arbores Americæ tropicæ, foliis alternis coriaceis oblongis glabris aut lepidotis, involucris antice apertis pedicellatis, pedunculis abbreviatis axillaribus.

Tribe HIPPOMANEÆ.

702, Dactylostemon *Schomburgkii* (Klotzch gen. nov.); Piarra, British Guiana, *Schomburgk*, *n.* 716.

Char. Gen. DACTYLOSTEMON. (Gymnorrhea *Leandro do Sacram. mss.* ad part. Actinostemonis *sp. Mart. mss*). Inflorescentia spicata, mono aut poly-stachya. Spicæ ante anthesin tegmentis magnis strobilaceo-imbricatis deinde deciduis obtectæ. Flores monoici, apetali, in utroque latere ad rhachin villosum glandula minutissima disciformi sessili instructi, floribus fœmineis pedicellatis ad basin spicæ masculæ paucis rarissime solitariis, singuli bractea minuta suffulti. Masc. Bracteæ minutæ, 2-3-floræ, cum pedicello seu germinis rudimento truncato. Stamina 6-16 in pedicellum satis longum apice obsolete 2-3-bracteolatum connata, filamentis distinctis aut subnullis, antheris brevissimis bilocularibus ex apice filamenti pendulis. Fœm. Calyx triphyllus. Ovarium triloculare, loculis uniovulatis. Stylus nullus. Stigma trifidum, lobis simplicibus revolutis intus stigmatosis. Capsula trilocularis tricocca, coccis bivalvibus monospermis, valvulis infra apicem bicornutis. Arbores Americæ tropicæ, foliis alternis membranaceo-coriaceis penninerviis integerrimis glabrescentibus, spicis subterminalibus.— D. *Schomburgkii*, ramulis tenuibus elongatis junioribus petiolisque villosis, foliis oblongis obtusis basi rotundatis evanescente-pubescentibus, tegmentis glumaceis striatis margine pubescentibus, spicis solitariis terminalibus brevibus, filamentis longiusculis complanatis inæquilongis. Arbor. Folia 1-3 unc. longa, 4-12 lin. lata.

703. Sapium *prunifolium* (Klotzsch sp. n.); ramulis fusco-purpureis glabris, foliis oblongis apice inflexis versus basin attenuatis margine remote subserratis, petiolis apice biglandulosis, spicis terminalibus aut axillaribus solitariis.— Folia membranacea, utrinque glabra, 2-2½ unc. longa, 8-11 lin. lata.—Near Savannahs, British Guiana, *Schomburgk n.* 283.

704. Microstachys *Guianensis* (Klotzsch sp. n.) ramulis gracilibus pubescentibus erectis, foliis ovato-lanceolatis acuminatis margine setoso-serrulatis basi cordatis utrinque sparsim pubescentibus, spicis brevibus extraaxillaribus pubescentibus petiolo duplo longioribus plerumque oppositifoliis, capsulis conescenti-pilosis. — Fruticulus sesquipedalis, erectus, ramosus, superne pubescens, inferne subglaber. Folia 1-1 unc. longa, 4-6 lin. lata. Petioli pubescentes

2-3½ lin. longi.—Fissures of rocks, British Guiana, and Barcellos on the Rio Negro, *Schomburgk*, *n.* 912.

Tribe ACALYPHEÆ.

705. Tragia *grandifolia* (Klotzsch sp. n.); fruticosa, foliis magnis oblongo-obovatis basi cuneatis apice acuminatis margine grosse repando-serratis subtus in nervis evanescente pilosis, spica axillari longissima pubescente ramosa, glomerulis distantibus, bracteis lanceolatis villosis indivisis, floribus masculis triandris, filamentis basi bulbosis.—Folia 5-7 unc. longa, 1½-2 unc. lata, subtus pallidiora. Spica 8 unc. longa.—British Guiana, *Schomburgk*.

706. Traganthus *sidoides* (Klotzsch gen. nov.)—Rubbish at Anna-y, British Guiana, *Schomburgk n.* 134.

Char. Gen. TRAGANTHUS. Flores monoici in foliorum axillis plerumque aggregati. Masc. Calyx 4-partitus. Stamina 4. Filamenta libera, subulata, antherarum loculis globosis horizontalibus longitudinaliter dehiscentibus. Fœm. Calyx parvus, 4-partitus, bracteis magnis subtrifariam imbricatis cinctus. Ovarium triloculare, hirsutum, loculis uniovulatis, Styli 6, breves, distincti, subulati, recurvi, extus setosi. Capsula hirsuta, triangularis, depressa, tricocca, coccis monospermis. Columna latealata, alis margine argute dentatis. Semina triangulata.—Herba Guianensis, annua, hirsuta, ramosa, sesquipedalis, radice fusiformi sparsim fibroso, albido, ramis erectis inferioribus suboppositis longissimis. Folia alterna, deflexa, margine serrata, minutissime pellucido-punctata, stipulis ad basin petiolorum geminis caducis. Spicæ axillares, abbreviatæ, bracteatæ, bracteis magnis sessilibus ochreatis, masculis multifloris. Flores masculi ante anthesin sessiles.

707. Alchornea *latifolia, Hayne Arzneygew. X. t.* 42.—Rio Branco, *Schomburgk n.* 883.

708. A. *Schomburgkii* (Klotzsch sp. n.); foliis ellipticis obtuse acutis remote serratis membranaceo-coriaceis deflexis supra glabris subtus minutissime stellulato-puberulis, spicis masculis ramosissimis lateralibus undique stellato-puberulis,

floribus octandris, calycibus tripartitis. Folia 5 unc. longa, 2 unc. lata. Petioli teretiusculi 4-7 lin. longi.—British Guiana, *Schomburgk, n.* 591.

Tribe Crotoneæ.

709. Mabea *Taquari Aubl. Pl. Gui.* II. *p.* 867 *t.* 334 *f.* 2.—British Guiana, *Schomburgk, n.* 40.

710. Cnidoscolus *quinquelobus, Pohl, Pl. Bras. v.* I. p. 63.—Jatropha urens, *Linn.*—British Guiana, *Schomburgk.*

711. Brachystachys *hirta* (Klotzsch gen. nov.—Croton hirtus *Lher.—Geiseler, Crot. Monogr. p.* 62.—British Guiana, *Schomburgk, n.* 101. French Guiana, *Leprieur, Herb. Par. n.* 205.

Char. Gen. Brachystachys. (Crotonis species herbaceæ *Auct.*) Flores monoici. Masc. Calyx 5-partitus æqualis. Corolla petala 5, ovalia aut lanceolata. Discus 5-radiatus, radiis calycis laciniis oppositis. Stamina 10, disco villoso inserta, filamentis liberis æstivatione inflexis demum erectis, exsertis, antheris introrsis filamenti apice adnatis.—Fœm. Calyx 5-partitus, irregularis, laciniis 3 exterioribus latioribus majoribusque integerrimis, 2 interioribus linearibus. Corollæ petala 5, inæquilonga, subulata, subinde rudimentaria. Discus hypogynus 5-radiatus, radiis semiliberis calycis laciniis oppositis. Ovarium sessile, 3-loculare, loculis uniovulatis. Stylus usque ad basin 6-partitus, partitionibus filiformibus apice incrassatis. Capsula tricocca, coccis bivalvibus monospermis. Semina pendula, testa crustacea, caruncula umbilicata instructa. — Herbæ Americæ tropicæ, pilosæ, foliis alternis margine serratis dentatis aut crenatis subtus ad basin glandulosis, stipulis setaceis, spicis axillaribus terminalibusque brevibus monoicis, floribus fœmineis in parte inferiore spicæ masculæ sparsis.

712. Geiseleria *chamædryfolia, Klotzsch, gen. nov.* Croton chamædryfolius *Lam. Geisel. Crot. Monogr. p.* 65.—British Guiana, *Schomburgk, n.* 241.

Char. gen. Geiseleria. (Crotonis species herbaceæ, *Auct.*) Flores monoici. Masc. Calyx 4-partitus, æqualis, æstivatione valvata. Petala 4, ovato-lanceolata. Discus 4-radiatus, radiis calycis laciniis oppositis. Stamina 8, disco villoso inserta, filamentis liberis, æstivatione inflexa, demum erectis exsertis, antheris globosis introrsis. Fœm. Calyx 5-partitus, æqualis. Corollæ petala minutissima, subulata. Discus hypogynus 5-radiatus, radiis sepalis oppositis. Ovarium sessile, triloculare, loculis uniovulatis. Stylus usque ad basin tripartitus, laciniis filiformibus profunde bifidis. Capsula tricocca, coccis bivalvibus monospermis.—Herbæ Americanæ, facie Brachystachyos. Genus dixi in memoriam cl. Ed. Fred. Geiseler, M.D.

713. Croton (Fruticosi, foliis glandulosis) *suavis*, *Kunth, Nov. Gen. et Sp. Amer.* 11, *p.* 60, ramulis dichotomis dein glabrescentibus fusco-nigris junioribus stellato-pilosis, foliis oblongo-lanceolatis acutis obsolete crenato-serratis aut integerrimis supra scabris subtus incano-tomentosis basi rotundatis glandulis 2-4 pedicellatis instructis, floribus masculis dodecandris.—C. salicifolium *Herb. Willd. n.* 17852.—Barcellos on the Rio Negro, *Schomburgk, n.* 944.

Char. reform. gen. Croton. Flores monoici. Masc. Calyx 5-partitus aut 5-fidus, laciniis æstivatione valvatis. Corollæ petala 5, distincta. Discus 5-radiatus aut 5-dentatus. Stamina 10-20, disco nudo aut villoso inserta, filamentis liberis æstivatione inflexis demum erectis exsertis, antheris introrsis filamenti apice adnatis. — Fœm. Calyx 5-partitus aut 5-fidus. Petala 5, subinde rudimentaria. Discus hypogynus 5-radiatus aut 5-dentatus. Ovarium sessile, triloculare, loculis uniovulatis. Stylus tripartitus, partitionibus semel bis aut ter bifidis, intus stigmatosis. Capsula tricocca, coccis bivalvibus monospermis. Arbores, frutices aut suffrutices in America tropica copiose, rarius in America extratropica, in Asia, et in Africa australi crescentes, foliis alternis sæpe stipulatis et ad basin biglandulosis integris serratis aut lobatis, pilis stellatis aut squamis lepidotis consitis, floribus laxius densiusve spicatis, spicis axillaribus terminalibusque abbreviatis aut elongatis, masculis superioribus, inferioribus fœmineis.

714. Croton (Fruticosi, foliis glandulosis) *palanostigma*

(Klotzsch sp. n.) ramulis evanescente-tomentosis scabris, foliis magnis latissime-ovatis acutis cordatis margine evanescente-denticulatis supra scabriusculis subtus incano-tomentosis longe petiolatis, subtus ad basin glandulis 2 scutellæformibus magnis sessilibus gelatinosis instructis, spicis longis terminalibus, floribus masculis dodecandris glomerato-spicatis, fœmineis magnis, calycibus 5-dentatis, petalis minutis squamæformibus longe barbatis, germinibus setoso-hirtis, stylo profunde tripartito, laciniis ter bifidis stellatim radiatis. —Palanostigma crotonoides, Mart. mss.—Frutex ramosus, 9-10-pedalis. Rami atrofusci, scabri, nudiusculi. Ramuli ferrugineo-tomentosi. Folia in ambitu versus marginem glandulis sparsis sessilibus gilvis parvis scutellæformibus conspersa, 10 unc. longa, 8 unc. lata, juniora 3½ unc. longa, 2 unc. lata. Petioli teretiusculi, ferrugineo tomentoso-villosi, 1½-2 unc. longi. Spicæ tomentoso-hirsutæ, 9-12 unc. longæ. Flores fœminei plurimi, in spicæ parte inferiore sparsi. —On the River Padawire, *Schomburgk, n.* 1008. In Tapura woods, Brazil, *Martius.*

715. Croton (Fruticosi, foliis glandulosis) *cuneatus* (Mart. in Herb. Reg. Monac.) ramulis striatis petiolisque flavido-lepidotis, foliis magnis oblongis utrinque attenuato-obtusis penninerviis margine remote-serratis, supra sparsim subtus dense lepidotis basi biglandulosis, spicis longis terminalibus subaggregatis, floribus masculis dodecandris glomerato-spicatis, fœmineis apetalis subsolitariis, germinibus dense lepidotis, stigmatibus tribus multipartitis.—Frutex ramosus, 12-pedalis. Folia longe petiolata subcoriacea, supra atro-viridia subnitentia, 5-7 unc. longa, 1½-2 unc. lata, glandulis 2 sessilibus instructa. Squamulæ minutissimæ, laciniato-ciliatæ, e flavido albidæ. Petioli 12-15 lin. longi. Spicæ 6-10 unc. longæ, cum floribus bracteisque dense-lepidotæ. Calycis laciniæ intus lanatæ. Petala in floribus masculis spathulata, villosa. British Guiana (Roraima expedition) *Schomburgk.* On the Amazon river, *Pœppig, n.* 2593, *Martius.*

716. C. (foliis eglandulosis) *Essequiboensis,* (Klotzsch sp.n.)

ramulis canescente stellato-pubescentibus, foliis ovatis cordatis acutis glabris pellucido-punctatis membranaceo-subcoriaceis margine remote-serratis, petiolis compressis supra sulcatis basi dilatatis subglabris, spicis stellato-pubescentibus terminalibus axillaribusque subsolitariis, bracteis spathulatis glabris margine laciniato-glandulosis floribus masculis decandris, laciniis calycinis integris, petalis obovatis calyce longioribus, filamentis basi pilosis, floribus fœmineis 5-petalis, petalis linearibus, laciniis calycinis orbiculari-ovatis obtusis fimbriato-glandulosis, germinibus stellato-pilosis, stigmatibus tribus multipartitis, lobis filiformibus puberulis conniventibus.—Frutex. Folia 15-20 lin. longa, 8-10 lin. lata. Petioli 6 lin. longi. Spicæ 2-2½ unc. longæ. Flores albi. Pedicelli 1-2 lin. longi.—On the Essequibo, *Schomburgk*, *n.* 33.

717. C. (foliis eglandulosis) *nervosus*, (Klotzsch sp. n.) ramulis petiolisque pubescenti-villosis, foliis ovatis acuminatis penninerviis integerrimis supra saturate-viridibus subglabris subtus albido-lepidotis pubescentibus, basi rotundato-emarginatis, costa media villosa, spicis terminalibus subaggregatis albidis villosis, bracteis lanceolatis pubescentibus, calycibus pubescenti-lepidotis albidis 5-fidis, floribus masculis hexadecandris, filamentis pilosis, floribus fœmineis apetalis, germinibus stellato-pilosis aut pubescenti-lepidotis, stigmatibus tribus multipartitis, lobis pubescentibus subulatis conniventibus.—Frutex 10-12-pedalis. Folia 3 unc. longa, 12-14 lin. lata. Squamulæ adpressæ radiato-pilosæ. Stipulæ filiformes, hirsutæ, deciduæ. Petioli 4-5 lin. longi. Spicæ 2-3 unc. longæ. Flor. masc. Petala 5, ovalia, obtusa, calycem subsuperantia, intus pubescentia. Calycis laciniæ ovatæ, obtusæ, intus glabræ.

β *pubescens*, ramulis petiolisque albido-pubescentibus, foliorum nervis densis ad paginam inferiorem prominentibus, floribus vix pubescentibus. Rio Takutu, *Schomburgk n.* 802.

β *villosus*, ramulis petiolisque rufescenti-villosis, foliorum nervis remotis vix prominentibus, floribus pubescente-villosis. On the Essequebo, *Schomburgk*, *n.* 44.

718. Caperonia *angustissima*, (Klotzsch, sp. n.) caule

herbaceo tereti glabro substriato tenui erecto ramoso ramulis foliisque sparsim hirsutis, foliis sessilibus anguste-linearibus acutis margine remote-serratis, stipulis brevissimis persistentibus, spicis axillaribus monoicis subhirsutis, bracteis persistentibus brevissimis navicularibus acutis glabris, floribus masculis deciduis minutis, fœmineis sessilibus. Caulis bipedalis. Folia 2-3 unc. longa ⅔ lin. lata. Spicæ biunciales. British Guiana, *Schomburgk, n.* 132.

719. C. *paludosa,* (Klotzsch, sp. n.); caule herbaceo subcarnoso flexuoso subsimplici evanescente hirto, foliis petiolatis anguste lanceolatis acutis sparsim hirsutis margine remote aculeatis, spicis abbreviatis axillaribus tenuissime hirsutis, floribus fœmineis pedicellatis. — Caulis pedalis, crassus. Folia 2-2½ lin lata, 2½-3 unc. longa. Stigmata colorata. British Guiana, *Schomburgk.*

Tribe PHYLLANTHEÆ.

720. Phyllanthus *microphyllus Kunth, Nov. Gen. et Sp. v.* ii. *p.* 87. British Guiana, *Schomburgk, n.* 420.

721. P. *Guianensis* (Klotzsch, sp. n.); fruticosus, ramis erectis gracilibus, foliis subpinnatim dispositis ellipticis brevissime acutis glabris, floribus axillaribus brevi-pedicellatis subternis, calycibus sexpartitis, flore fœmineo unico, stylo nullo, stigmatibus tribus bifidis.—Frutex gracilis, bipedalis. Folia læte viridia, 4 lin. longa, 2 lin. lata. On the Essequebo and Rupunoony, *Schomburgk, n.* 22 *and* 529.

722. P. *piscatorum, Kunth, Nov. Gen. et Sp. v.* ii. *p.* 90. Barcellos on the Rio Negro, *Schomburgk n.* 927.

723. P. *adianthoides* (Klotzsch, sp. n.) fruticosus, ramis distichis tenuibus, foliis subpinnatim dispositis membranaceis rigidis ovatis subobtusis junioribus mucronatis utrinque glabris, floribus fasciculatis longe pedicellatis ternis quaternisve, calycibus sexpartitis, floribus masculis diandris, anthesis sessilibus bilocularibus extrorsis longitudinaliter birimosis. Frutex glaber, ramosus. Folia 1-2 unc. longa, ½-1 unc. lata. British Guiana, *Schomburgk.*

Tribe BUXEÆ.

724. Discocarpus *Essequeboensis* (Klotzsch, gen. nov.). On the Upper Essequebo, *Schomburgk* n. 35, 659 *and the fruit specimens of n.* 706.

Char. Gen. DISCOCARPUS. Flores dioici, in foliorum axillis aggregati. Pedicelli breves, squamis aridis fuscis subpersistentibus dense vestiti. Masc. Calyx cyathiformis inæqualiter 5-fidus, segmentis intus squama brevi instructis. Petala nulla. Stamina 5, longe exserta, inferne in cylindrum coalita. Germinis rudimentum parvum, pedicelliforme, trifidum.—Fœm. Calyx profunde 5-fidus persistens. Petala 5 calycis segmentis alterna. Staminum rudimenta 5, ad basin germinis inserta. Discus hypogynus carnosus, crenato-marginatus. Ovarium sessile, triloculare, loculis biovulatis. Stylus brevissimus, crassus; stigmata tria, petaloidea, recurva, crenato-laciniata, basi angusta, supra canaliculata. Capsula globoso-depressa obtuse sexangularis, tricocca, pubescens, coccis bivalvibus, abortu monospermio.—Arbores Americæ tropicæ, foliis alternis simplicibus coriaceis glaberrimis rigidis, floribus aggregato-fasciculatis.—D. *Essequeboensis*, ramulis albido-cinereis lævibus, foliis ovatis apice attenuato-obtusis supra nitidis, germinibus capsulisque velutinis lævibus.

725. Podocalyx *loranthoides* (Klotzsch, gen. nov.) Dry Savannahs, British Guiana, *Schomburgk, n.* 978.

Char. Gen. PODOCALYX. Flores dioici, densissime glomerulati, glomeruli distantes, in spicas axillares dispositi, unibracteati. Masc. Calyx minimus, campanulatus, quadridentatus, longe pedicellatus. Stamina 4, exserta, dentibus calycinis opposita, filamenta sub ovarii rudimento pulvinato inserta; antheræ subglobosæ, utrinque obtusæ, biloculares, extrorsæ. Fœm ....Arbor Guianensis foliis alternis exstipulatis ? integerrimis glabris coriaceis.—P. *loranthoides*, folia ovalia, petiolata, pinninervia, apice acuta. Spicæ masculæ in apice ramorum axillares calycesque ferrugineo-pubescentes.

(*To be continued.*)

Contributions towards a FLORA OF SOUTH AFRICA. *By* DR. C. F. MEISNER, *Professor of Botany, at the University of Basil, Switzerland.*

(Continued from p. 476.)

TILIACEÆ.

1. *Grewia occidentalis, L.* DC. prodr. 1. p. 511, n. 35.—Ad latera montis Tafelberg (III. D. b.) Sept. 1838. Herb. Krauss.

2. *G. Caffra, nob.*—Ramulis foliisque novellis et calycibus pilosiusculis, cæterum glabra; stipulis setaceis petiolum æquantibus, foliis oblongis vix obliquis acutis 3-nerviis minute serratis; pedunculis axillaribus 2-floris pedicellisque petiolum vix superantibus; alabastris oblongis, basi tumentibus, sepalis linearibus petalis genitalibusque longioribus.

In sylvis primitivis prope Port Natal (V. c.) Dec. 1839. Krauss, n. 209.

From the foregoing species, this, which resembles it in habit, is perfectly distinct by narrower and minutely serrated (not obtusely dentate) leaves, by only half as large flowers, and by quite differently shaped alabastra, resembling those of a *Xylopia*, whereas in *G. occidentalis* they are almost globose. Of the other Cape species hitherto described, *G. obtusifolia*, Willd. differs from ours in its pubescence; *G. glandulosa*, Vahl, in its acuminate leaves and shorter peduncles; *G. flava*, DC. in the shape of its leaves, its one-flowered peduncles, etc.

MELIACEÆ?

Aitonia Capensis, Thunb. — In solo argillaceo regionis Karroo (II. c.) Apr. 1839. Krauss.

OXALIDEÆ.

1. *Oxalis tubiflora, Jacq.* DC. prodr. 1. p. 693, n. 39.—In arenosis planitiei Capensis, (III. E. b.) Jun. 1838. Krauss, n. 1153.

2. *O. canescens, Jacq.* DC. l. c. n. 40.—Cum præcedente legit Krauss, n. 1162.

3. *O. hirta, Linn.* DC. l. c. n. 42.—In pascuis prope Greenpoint, (III. D. b.) Maj. 1838. Krauss, n. 1151. (Un. itin. n. 594.)

4. *O. hirtella, Jacq.* DC. l. c. n. 43.—In arenosis planitiei Capensis (III. E. b.), Jun. 1838. Krauss, n. 1155.

5. *O. multiflora, Jacq.* DC. l. c. n. 44.—Cum præcedente. Krauss, n. 1168.

6. *O. incarnata, Linn.* DC. l. c. n. 49.—In graminosis prope Constantiam (III. D. b.) Sept. 1838. Krauss n. 1148.

7. *O. venosa, Sav.* DC. l. c. n. 51.—In arenosis plan. Cap. Jun. 1838. Hb. Krauss.

8. *O. sericea, Linn. fil.* DC. l. c. n. 59.—In solo argillaceo prope Tulbagh (IV. B. b.) Maj. 1838. Krauss, n. 1154.

9. *O. phellandrioides, E. Meyer*, in pl. Drège.—Bulbosa, glabra, caule tenello paucifolio, apice 2-3-floro; foliis 3-foliolatis, foliolis profunde bilobis, lobis divaricatis lineari-lanceolatis obtusis, sepalis lanceolatis acutiusculis, apice glandulosis, corollâ brevioribus; staminibus stylisque subæquilongis, calycem vix superantibus.

In solo argillaceo prope Paardeberg (III. E. b.) Maj. 1838. Krauss, n. 1159.

A very tender plant, 4-6 inches high, closely allied to *O. caprina*, Linn., which differs in being stemless, and in having obcordate leaflets. The leaflets are three times shorter than the petiole, scarcely 3-4 lines long, the lobes not quite one line in breadth, straightly diverging in nearly a right angle and separated from each other for more than half their length. Pedicels of the umbella twice or thrice as long as the (erect) flower which, in size, shape, and calyx, resembles that of *O. incarnata*. Petals violet.

10. *O. compressa, Jacq.* DC. l. c. n. 63.—In arenosis prope Riet Valley (III. E. b.) Jun. 1838. Krauss, n. 1143.

11. *O. stenophylla, nob.*—Bulbosa, subacaulis, glabra? foliis simplicibus, linearibus, obtusiusculis, petiolatis; scapis 1-floris, folia superantibus, ebracteolatis; floribus erectis; calyce corollâ quintuplo breviore, 5-partita, laciniis lanceolatis

acutis eglandulosis, staminibus altioribus calycem breviora stylosque subæquantem duplo superantibus.

In solo argillaceo prope Tulbagh (IV. B. b.) Maj. 1838. Krauss, n. 1160.

A remarkable species, belonging to the group of *O. monophylla* Jacq., but quite distinct from all the species hitherto described. The whole plant is more or less covered with minute capitate hairs, which, however, may possibly be a mucor rather than a real pubescence. Bulb ovate, of the size of a middling cherry, clothed with lacerated thin membranes, beneath which appears a thick irregular netting of fibres; from its pointed, pyramidal top arises a thin stem, scarcely longer than 3-5 lines, bearing at the extremity two or three small roundish membranaceous scales, from the axils of which spring about half a dozen erect leaves and nearly as many peduncles. Leaves (including the petiole which is never longer than 4-5 lines) about 1½ inch long, their lamina not above one line broad, and connectedwith the filiform petiole by an almost obsolete articulation, flat, of a thin herbaceous texture, attenuated at both ends, showing one faint middle nerve, and bearing no gland at the obtuse apex. Peduncles filiform, 2-2¼ inches long, erect, without any trace of bracteoles. Flowers twice the size of those of *O. acetosella;* calyx funnel-shaped, 2 lines long, of a dark purplish-brown, divided below the middle into 5 acute equal lobes of two-thirds of a line in breadth, without a gland at their top; tube of the corolla funnel-shaped, about twice as long as the calyx, pale yellow? limb spreading, pale violet (lilac), lobes rounded. Styles a little longer than the calyx and the shorter stamens.

12. *O. arcuata, Jacq.* DC. prodr. 1. p. 698, n. 96.—In solo argillaceo prope urbem Capstadt (III. E. b.) Maj. 1838. Krauss, n. 1161.

13. *O. speciosa, Willd.* DC. l. c., n. 107.—In solo argillaceo prope Tulbagh (IV. B. b.) Maj. 1838. Krauss, n. 1147. (ex parte.)

14. *O. purpurea, Willd.* DC. l. c., n. 109.—Cum præced. l. Krauss, n. 1147. (ex parte.)

15. *O. convexula, Jacq.* DC. l. c., n. 115.—Cum præced. Herb. Krauss. propr.

16. *O. humilis, Thunb.* DC. l. c., n. 111.—In arenosis planitiei Capensis (III. E. b.) Jun. 1838. Krauss, n. 1166.

17 *O. punctata, Linn. fil.* DC. l. c., n. 113. In pascuis circa Tulbagh (IV. B. b.) Maj. 1838. Herb. Krauss. propr.

18. *O. obtusa, Jacq.* DC. l. c., n. 117. Eckl. et Zeyh. enum. p. 93. (ex cit. specim. Un. itin. n. 587.)—Locis argillaceis circa urbem Capstadt (III. E. b.) Jul. 1838. Krauss, n. 1152.

19. *O. lanata, Jacq.* DC. l. c., n. 118.—Cum præcedente. Krauss, n. 1146.

20. *O. tenella, Jacq.* DC. l. c., n. 125.—Cum præced. Krauss, n. 1149.

21. *O. filicaulis, Jacq.* DC. l. c., n. 129.—In arenosis prope Riet Valley (IV. B. b., Jun. 1838. Herb. Krauss propr.

22. *O. cuneata, Jacq.* DC. l. c., n. 131.—Ad latera montis Leuwenberg (III. D. b.) Jul. 1838, Krauss, n. 1150.

23. *O. cuneifolia, Jacq.* DC. l. c., n. 132.—In pascuis prope Tulbagh (IV. B. b.) Maj. 1838. Krauss, n. 1156.

24. *O. pusilla, Jacq.* DC. l. c., n. 133? (non E. Mey. in plant. Dreg.)—In arenosis plan. Cap. (III. E. b.) Maj. 1838. Krauss, n. 1157.

25. *O. linearis, Jacq.* DC. l. c., n. 134.—In pascuis prope Tulbagh (IV.B.b.) Jun. 1138. Krauss, n. 1158.—Proxima, *O. limbatæ,* E. Mey. in pl. Dreg. quæ non nisi calyis lobis brevioribus haud acuminatis differre videtur.

26. *O. minuta, Jacq.* DC. l. c., n. 138.—In arenosis planitiei Capensis (III. E. b.) Jun. 1838. Krauss, n. 1167.

27. *O. glabra, Thunb.* DC. l. c., n. 139.—Cum præced. Krauss, n. 1163 et 1164.

28. *O. tenuifolia, Jacq.* DC. l. c., n. 142.—Ad latera montis Tafelberg, alt. 2000 (III. A, e.) Jul. 1838. Krauss, n. 1145.

29. *O. polyphylla, Jacq.* DC. l. c., n. 143.—Cum præcedente, altit. 1000, legit Dr. Krauss, n. 1165.

β. longifolia, nob.; foliolis elongatis divaricatissimis, caule gracillimo elatiore.

Ad latera montium prope urbem Capstadt (III. E, b.) Jul. 1838. Krauss, n. 1144.

A remarkable variety, if not a distinct species, growing up to the height of more than a foot, and bearing at the summit of the filiform stem, one single fascicle of 6-8 leaves, and one single-flowered peduncle, of about double the length; leaflets 12-16 lines long) twice as long as those of the common form) scarcely half a line in breadth, all of them shortly hooked at the point; petiole almost capillary, sometimes as long as the leaflets, sometimes much shorter. The flowers are exactly as in Sieber's specimens of *O. polyphylla* (Fl. Mixta, n. 34), considerably smaller than in Drège's plant and the sepals narrower than in Krauss's n. 1165.

30. *O. pectinata, Jacq.* DC. l. c. n. 150 (ex. ic. Burm. Afr. t. 30, f. 1, a Candollio cum? huc citata, cum planta nostra bene congrua.)—In pascuis prope Tulbagh (IV. B, b.) Maj. 1838. Herb. Krauss, propr.

ZYGOPHYLLEÆ.

1. *Zygophyllum fœtidum, Schrad. et Windl.* DC. prodr. 1, p. 705, n. 4.—In solo argillaceo prope urbem Capstadt (III. E, b.) Aug. 1838. Hb. Krauss, propr.

2. *Z. Morgsana, Linn.* DC. l. c. n. 10.—In solo argillaceo prope Uitenhage (IV. C, c.) Maj. 1839. Krauss, n. 1222.

3. *Z. Lichtensteinianum, Chamisso* in Linnæa 5, p. 47.—Ad litus in sinu Kampsbaay (III. D, b.) Maj. 1838. Krauss, n. 1220.

4. *Z. sessilifolium, Linn.* DC. l. c. n. 11. E. Meyer, in pl. Drège.—In solo argillaceo prope Uitenhage (IV. C. c.) Apr. 1839. Krauss, n. 1221.

5. *Z. debile, Chamisso* l. c. p. 45.—Prope urbem Capstadt (III. D, b.) Jul. 1838. Krauss, n. 1219.

6. *Z. spinosum, Linn.* DC. l. c. n. 12. E. Mey. in pl. Drège. —In arenosis planitiei Capensis (III. E, b.) Jun. 1838. Krauss, n. 1218.

7. *Tribulus terrestris, L.*—In arenosis prope Zwartevaley, distr. George (IV, C, b.) Febr. 1839. Krauss, n. 847.

OCHNACEÆ.

Diporidium Natalitium, nob.—Glaberrimum; foliis oblongis acutis serratis; racemis ramulos terminantibus, brevissimis, umbelliformibus, paucifloris; sepalis ovatis acutis, stamina superantibus.

Ad sylvarum margines prope Port Natal (V, c.) Aug. 1839. Krauss n. 454.

This species differs from *D. atropurpureum* and *arboreum*, Wendl., especially in the form and size of its leaves, and from *D. Delagoense*, Eckl. et Zeyh. enum. p. 118, in its racemose (not solitary) pedicels.—Branches numerous, semi-patent, almost straight, with a greyish bark, rough from small wrinkles and numerous minute warts. Leaves 2-2½ inches long (including the petiole, which is 1-2 l. long), 9-11 lines broad, attenuated at both ends, rather equally serrated along the whole margin; serratures about one line distant from each other, with a short, adpressed, more or less caducous point; veins faintly prominent on the upper surface, scarcely visible underneath. Inflorescence terminal on axillary branches, which rarely attain the length of one inch, and usually bear one small leaf; pedicels 4-8 lines long, originating so near one another, from a common peduncle of scarcely 2-3 lines length, that the inflorescence looks more like an umbel than a raceme; their articulation is 1-2 lines above the base, and their inferior portion persistent. Flower-buds globose, of the size of a pepper-corn. Sepals nearly equal, 3 lines long, 1⅔ l. broad, of a livid brownish-green. Petals longer than the sepals, of a rich yellow (injured by insects in our specimens). Anthers oblong, 1 line long, obliquely truncate, with two very conspicuous oblong pores; filaments shorter than the style. Ovary 8-lobed.

RHAMNEÆ.

Phylica (*Eriophylica*) *gnidioides, Eckl. et Zeyh.* en. p. 135. —Inter rupes ad collium latera pagi Langekloof, distr. George (IV. B, c.) Mart. 1839. Krauss n. 753.

A pretty shrub, looking much more like some species of

Gnidium (among which, indeed, it has been sent to us) than like other *Phylicas*. Ecklon's diagnose is very good. The leaves are generally opposite, sometimes, however, verticillate, or, especially on the young (tomentose) branchlets, alternate, 3 lines long, with a very short, but distinct, pubescent petiole, in form and size resembling those of *Erica carnea*, only they are a little thicker. The flowers, coloured like those of *Soulangia rubra*, are 4 lines long, perfectly sessile, and collected in considerable number into terminal heads or clusters, of the size of a cherry. They are surrounded at the base by an irregular involucre, composed of ordinary, but smaller, leaves. The tomentum, with which the whole outside of the calyx is covered, is white, woolly rather than silky (as termed by Ecklon,) almost without lustre; tube of the calyx cylindrical, slightly funnel-shaped; limb erect, divided into five narrow scarcely acute lobes, of one line in length, smooth and reddish inside; petals minute, squamiform, cucullate, covering the anthers, dark-coloured (brown or purple?); style equal to the calycine lobes, stigma obtuse.

BRUNIACEÆ.

Brunia microphylla, Thunb. Fl. Cap. p. 207, DC. prodr. 2, p. 44, n. 15.—Inter rupes in summitate montium Baviaanskloof, alt. 3000 (IV. B, b.) Dec. 1838. Krauss n. 778.

Our plant (which was also sent us as a *Thymelæa*) might almost as well be taken for *B. phylicoides*, Thunb., which differs only in villose leaves, and capitula of the size of a pea. The young leaves are slightly, but distinctly, villous on the back, and strongly ciliated on the margin. Perhaps, therefore, the two species ought to be united. We must further observe, that they belong to the genus *Brunia*, not to *Raspalia*, to which they are referred by Brongniart and Ecklon (enum. p. 100) the ovary being, according to our reiterated examination, adherent to the calyx, with its inferior portion.—*Raspalia teres*, E. Mey. in Plant. Drèg. is very like our plant, and perhaps not distinct.

LEGUMINOSÆ.*

1. *Calpurnia lasiogyne, E. Meyer !* Comm. Pl. Afr. 1, p. 3. In sylvis circa port Natal (V. c.) Jul. 1839, Krauss n. 325.

2. *Cyclopia latifolia,* DC. prodr. 2, p. 101, n. 3. E. Meyer Comm. p. 3. Benth. in Annalen des Wiener Mus. 2, p. 67. Ad latera mont. Baviaanskloof, alt. 1000′ (IV. B. b.) Dec. 1838. Krauss n. 934.

3. *C. genistoides, R. Br.* DC. l. c. n. 1. Benth. l. c. (non E. Mey.) *C. galioides,* E. Meyer ! l. c. p. 4. (non DC.) Ad

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* It has been generally and justly regretted that the numerous new *Leguminosæ* discovered by Drège, Ecklon and Zeyher, have been described and published, nearly at the same time, in two separate works: "*Ernesti H. F. Meyer Commentariorum de Plantis Africæ Australioris, Vol. I., fasc.* 1, *Lipsiæ,* 1835," and "*Ecklon et Zeyher Enumeratio Plantarum Africæ Australis extratropicæ, Pars II., Jan.* 1836;" from which circumstance unavoidably resulted the serious inconvenience that a great number of identical species figure in each of these works under different names. To point out those which are synonyms, Dr. Walpers has taken the pains of comparing Drège's plants with those of Ecklon contained in the Royal Herbarium of Berlin (see his paper in the Linnæa, vol. 13, p. 449, seq.); but unfortunately he has only increased the mass of unnecessary synonyms, having—contrary to the established rule and principle—adjudged the priority to *Ecklon's* names, under the arbitrary pretext that, although the first part of Meyer's Commentaries bear upon the title-page the date of 1835, they were published "several months" *later* than Ecklon's Enum. pars II., which is dated January 1836. We have no means for ascertaining whether this be exactly true, and, if so, for what cause or reason Dr. Meyer's work bears an earlier date; nor is this of the least importance, since, according to the generally adopted law (see De Candolle, théor. élém., ed. 2, p. 282, art. 6) with which we perfectly agree, *the right of priority must depend upon the date printed on the title-page:* and therefore we feel ourselves bound to retain Dr. Meyer's names, his work being dated prior to that of Ecklon. Moreover, in a case of this nature, where two books have been published on the same subject nearly at the same time, the intrinsic value of the works ought to be taken into account, adjudging the preference to that in which the subject has been most scientifically treated. We cannot conclude these remarks without expressing our surprise at the manner in which Dr. Walpers speaks on the matter (l. c. p. 451), tending to raise suspicion against the candour of Dr. Meyer; a behaviour, the injustice of which has already been shown by Prof. von Schlechtendal (Linnæa, vol. 14, p. 706); but which, though offending to the feelings of every one who is acquainted with Dr. Meyer's real character, will, we trust, do less harm to the latter than to the credit of its own author.

latera mont. Steenberge (III. D, b.) Sept. 1838. Krauss, n. 933.

4. *C. sessiliflora, E. Mey.!* l. c. p. 4, Benth. l. c. (non Eckl. et Zeyh.) *C. Meyeriana*, Walpers in Linnæa 13, p. 454. Ad latera mont. Gnadenthalberg, alt. 2000′ (IV. A.) Dec. 1838. Krauss, n. 885.

5. *Podalyria sericea, R. Br.* DC. l. c. p. 101, n. 3, E. Mey., Comm. p. 5. Ad latera mont. Leuwenberg et Tafelberg, alt. 1000′ (III. D. b.) Jul. 1838. Krauss, n. 869 et 870. Several specimens, which differ in some degree in having the lobes of the calyx a little broader and shorter, and the sinus between them acute, instead of rounded, may perhaps belong to *P. patens*, Eckl. et Zeyh. Enum. p. 159, which, according to Dr. Walpers (l. c. p. 458) is a mere variety of *P. sericea.*

6. *P. cuneifolia, Vent.* DC. l. c. n. 4. Mey.! l. c. p. 5. In uliginosis planitiei Capensis (III. E. b.) Sept. 1838. Krauss, n. 871.

7. *P. biflora, Lam. α*, E. Mey. l. c. p. 6. *P. argentea*, Salisb. DC. l. c. n. 9. Ad latus occidentale montis Tygerberg (III. D, a.) Nov. 1838. Krauss, n. 868.

8. *P. buxifolia, Lam.* E. Mey.! l. c. p. 7. (haud Willd., Walpers, l. c. p. 458.) *P. glauca*, DC. (cfr. Walp. l. c. p. 459) Ad sylvarum margines in Outeniqua (IV. C. b.) Jan. 1839. Krauss, n. 867. Like many other Cape plants, this varies in the colour of its pubescence, sometimes pale yellow or whitish, and sometimes quite brown.

9. *P. hamata, E. Meyer* in Linnæa 7, p. 146?—Ad latera montium in Outeniqua (IV. C. b.) Mart. 1839. Krauss, n. 866. Dr. Walpers (l. c. p. 458) considers this species as a variety of *P. sericea*, R. Br., from which our specimens, which answer well the diagnose, are widely different, having flowers double the size, quite differently shaped leaves, and, except on the young foliage, a scarcely silky pubescence. We are much more inclined towards Mr. Bentham's opinion, who unites it with *P. hirsuta Willd.*, which, according to the diagnose (DC. prodr. II.. p. 101, n. 2) we cannot distinguish from our plant; but *P. argentea*, Salisb. which is considered

as identical with *P. hirsuta Willd.* by Dr. Walpers (Linnæa 13, p. 457,) and to which Mr. Bentham refers *P. hamata* (Ann. Wien. Mus. 2, p. 68) is also quite distinct from our plant in having much longer and often two-flowered peduncles, and much smaller flowers and leaves. Among Drège's plants we have seen no species with which our plant agrees. From *P. Burchellii, DC.* l. c. n. 1, which it seems to approach closely, especially by its very short peduncles, it differs in the form of the leaves, which are ovate or oval, (6-8 lines long, by 4-5 lin. in breadth) with a short recurved point, tomentoso-villose, and not reticulated on the inferior surface, adpresso-villose on the upper side which at last becomes almost glabrous. Pedicels one line long; flowers as large as in *P. calyptrata*; calyx villous, or almost hirsute, with light brown silky hairs, intruso-truncate at the base, five-cleft to below the middle; lobes lanceolate acute, nearly as long as the carina and alæ, the two upper less deeply divided. Corolla deep purple, the vexillum on the outside slightly pubescent towards the base. The pubescence of the young leaves is silky and golden or fulvous like that of the calyx; on the old foliage it is grey and scarcely shining.

10. *P. orbicularis, E. Meyer,* comment. p. 8.—Ad latera montium Baviaanskloof (IV. B. b.) Dec. 1838. Hb. Krauss, propr. Folia valde coriacea, juniora utrinque sericeo-villosa. Pedunculi et calyx pube breviore subtomentosi. Legumina turgida, pollicaria, pilis patentibus villosissima. This species is very near the preceding, and *P. hirsuta* Willd., but differs in having longer pedicels.

11. *P. calyptrata, Willd.* E. Mey.! comm. p. 10. Secus rivulos ad latus occidentale montis Tafelberg, alt. 1000′ (III. D. b.) Jul. 1338. Krauss, n. 872.

12. *Rafnia cuneifolia, Thunb.* DC. prodr. 2. p. 118, n. 3, E. Mey.! comm. p. 12.—In solo lapidoso prope Klein Rivier (IV. B. b.) Dec. 1838. Krauss, n. 932.

13. *R. triflora Thunb.* DC. l. c. n. 4. E. Mey.! l. c.—Inter frutices prope Constantiam (III. E. b.) Sept. 1838. Krauss, n. 931.

14. *R. angulata, Thunb.* DC. l. c. n. 9, E. Mey. l. c. p. 13.—In arenosis planitiei Capensis (III. E. b.) Nov. 1838. Krauss, n. 913.

15. *R. (Vascoa) perfoliata,* DC. l. c. p. 119, n. 2, E. Mey.! l. c. p. 15.—Inter lapides ad latera mont. Houwhoek, Zwellendam (IV., B. b.) Dec. 1838. Krauss, n. 922.

16. *Borbonia trinervia, Linn.* DC. l. c. p. 120, n. 2, E. Mey. l. c. p. 15.—In solo lapidoso arenoso prope Klein Rivier (IV., B. b.) Dec. 1838. Krauss, n. 916. Our specimen has the uppermost leaves ciliated with scarce and rather long hairs, and approaches therein to *B. barbata* Lam.; which, however, differs in having all the leaves lined with dense and shorter cilia, and in its sessile flowers.

17. *B. lanceolata, Linn.* DC. l. c. n. 3, E. Mey. l. c. 16.—In collibus prope Knysna Rivier, distr. George (IV. b.) Jan. 1839. Krauss, n. 915. In our specimens the flowers are a very little larger than in Drège's, which in all other points are exactly the same.

18. *B. cordata, Linn.* DC. l. c. n. 4, E. Mey.! l. c. p. 16.—In arenosis planitiei Capensis (III. E. b.) Sept. 1838. Krauss, n. 936.

19. *Liparia sphærica, Linn.* DC. prodr. 2 p. 121; E. Meyer! comm. p. 17.—Ramis glabris, superne costato-angulatis; foliis erectis, lanceolato-oblongis, apice attenuatis mucronato-acutis, basi obtusis 5-7 nerviis, nervis lateralibus v. omnibus tenuibus; bracteis eciliatis, exterioribus ovalibus, interioribus oblongis; calyce glabro, lobis superioribus ciliatis, inferiore eciliato.

In solo argillaceo ad latera montis Tafelberg (III. D. b.) Sept. 1838, Krauss, n. 937.

20. *L. crassinervia, nob.*—Ramis puberulis (demum glabratis) cicatrisato-dentatis; foliis patentibus v. deflexis, ovatis v. ovali-oblongis, brevissime acuminato-mucronatis, basi leviter cordatis 3-5-nerviis, nervis crassiusculis; bracteis ciliatis, exterioribus suborbiculatis, interioribus oblongis flores subæquantibus; calyce extus ubique pilosiusculo, lobis omnibus ciliatis.

In turfaceis arenosis Uitershoek (III. A. e.) Sept. 1838. Herb. Krauss, propr. This is perhaps *L. parva*, Vogel (Linnæa 13, p. 468) which, however, seems to differ "caule gracili, foliis acuminatis 3-nerviis, 3 lineas latis," and especially "bracteis acuminatis;" whereas our plant has rather strong and stiff branches, broader leaves, (4-5 lin. in breadth, by 6-8 in length) which are rather mucronate than acuminate, and even sometimes quite obtuse, and not at all acuminate bracts. From *L. sphærica*, besides the differences shown in the above diagnose, it will be at once distinguished by its capitulum and flowers, which are only half as large.

21. *Priestleya (Isothea) hirsuta*, DC. prodr. 2, p. 121, n. 2. (E. Mey. comm. p. 17.—In collibus prope Knysna Rivier, distr. George (IV. b.) Jan. 1839. Krauss, n. 914.

α. trinervia, nob.—foliis ovali-oblongis manifeste 3-nerviis.

β. subenervia, nob.—foliis lanceolatis, subenerviis v. obsolete 1-3 nerviis, junioribus longe ciliatis.

Both forms were gathered promiscuously by Dr. Krauss; to the first *α.* belong Drège's specimens and De Candolle's plant; the latter (*β.*) looks very much like *P. cephalotes, E. Mey.*, which, however, essentially differs in the obtuse calycine lobes.

22. *Priestleya (Anisothea) lanceolata, E. Mey.* in Linnæa 7, p. 150.—*Xiphotheca lanceolata*, Eckl. et Zeyh. Enum. p. 167.—Ad radicem montis Duyvelsberg (III. A. e.) Jun. 1838. Krauss, n. 825.

23. *P. (Anisothea) villosa*, DC. prodr. 2, p. 122, n. 11. E. Mey. comm. p. 19.—*Xiphotheca villosa*, Eckl. et Zeyh. l. c. p. 166.—Ad latera mont. Tafelberg, alt. 1000-2000 (III. A. e.) Sept. 1838. Krauss, n. 826.—Our plant differs from Meyer's diagnose in having the lobes of the calyx *longer* (instead of shorter) than the tube.

24. *P. (Anisothea) axillaris*, DC. l. c. n. 9. (non E. Meyer.) —*Xiphotheca axillaris*, Eckl. et Zeyh. l. c.—In lapidosis ad latera mont. Duyvelsberg, alt. 1000 (III. A. e.) Jul. Sept. 1838. Krauss, n. 824. The flowers are not always solitary, as stated by De Candolle.

25. *P.* (*Anisothea*) *Meyeri, nob.*—*P. axillaris,* E. Mey. comm. p. 20 (non. DC.)—Inter lapides ad latera montis Tafelberg, alt. 2500 (III. A. e.) Mart. 1840. Krauss, n. 864. —A very elegant shrub, certainly distinct from De Candolle's *P. axillaris,* as Dr. Meyer already suspected, and therefore we are obliged to change the name.

26. *Amphithalea densa,* Eckl. et Zeyh. Enum. p. 167 (excl. syn.?)—In montibus Outeniqua, distr. Uitenhage, alt. 1000 (IV. C. c.) Mart. 1839. Krauss, No. 865.—To this species Ecklon refers "*P. elliptica,* E. Mey. in Linnæa 7, p. 150, non DC.," though Meyer quotes DC. mem. legum. t. 33, as belonging to his plant. Ours is certainly quite different from De Candolle's *P. elliptica,* having the flowers scattered in the axils of the superior leaves, or sometimes near the top of very short branchlets, but always solitary, never truly terminal nor collected in 5-6-flowered umbels or heads. Flowers purplish, quite of the same structure as in *A. ericifolia,* but smaller. Leaves very crowded, rather patent, silky on both sides, oval, 3 lines long, 2 lines broad. *Lathriogyna candicans,* Eckl. et Zeyh. agrees with our plant both in generic and specific characters, except in having yellow flowers and calloso-mucronate leaves. *Ingenhoussia rosea,* E. Mey. comm. p. 153, which is referred to *A. densa* by Dr. Walpers (Linnæa 13, p. 471), does not appear to us to belong to it; from our plant at least it is widely different in its inflorescence.

27. *A. ericæfolia, Eckl. et Zeyh.* l. c. p. 169, Walp. l. c. p. 471.—*Priestleya ericæfolia,* DC. prodr. 2 p. 122, n. 7.—*Ingenhoussia ericæfolia,* E. Mey. comm. p. 21.—Ad latera montis Paarlsche Berg. alt. 1000 (III. A. e.) Jul. 1838. Krauss, n. 822.

28. *A. Kraussiana, nob.*—Ramis gracilibus, subsimplicibus, strictis; foliis patulis, linearibus, mucronato-acutis, margine revolutis, supra glabris nitidis, subtus adpresse sericeopilosis; floribus in summis axillis subfasciculatis, basi bracteolatis, fasciculis in spicam confertam approximatis.

Inter rupes ad latus occidentale montis Duyvelsberg (III. A. e.) Jun. 1838. Krauss, n. 823.

This is very near *A. ericæfolia*, especially as to the inflorescence, but it is certainly and essentially distinct in its much less crowded, narrower (almost acerose) leaves and almost twice as large flowers, which at the base of the spike form fascicles or very short corymbs of 6-8 blossoms borne on a peduncle of 1-2 lines in length, and in the higher axils are aggregated by 2 or 3 only and almost sessile. The calyx is 2-2½ lines long (only ⅓ shorter than the corolla) and covered with a canescent slightly silky pubescence; its 3 inferior lobes are narrow and acute, 1 line long. The colour and structure of the flowers are quite as in *A. ericæfolia*, but the pubescence of the branches longer, more pilose and silky, not minute and tomentose as in that species. Our plant might be taken for *A. incurvifolia*, Eckl. et Zeyh.; but this having been found by Dr. Walpers, who has seen authentic specimens, to be merely De Candolle's var. *β*. of *A. ericæfolia*, with which our plant never can be united or confounded, we must still consider it as distinct. Nor can we think it identical with *A. virgata*, Eckl. et Zeyh. l. c. p. 169 (*Indigofera axillaris*, E. Mey. in Linnæa 7, p. 166, fide Ecklon), which seems to have quite the same foliage, but is said by Ecklon to have the flowers terminal, geminate or in fascicles of 3 to 5 (a character, perhaps, inaccurately expressed), and filiform short branches; whereas E. Meyer says, of his *Indigofera axillaris*, "floribus axillaribus solitariis."

29. *Hallia angustifolia*, DC. prodr. 2, p. 123, E. Mey. comm. p. 82.—In arenosis planitiei Capensis (III. E. b.) Nov. 1838. Krauss, n. 848.—Dr. Walpers (Linnæa 13, p. 511) unites this to *H. virgata*, Thunb., though, apparently, without having seen authentic specimens of the latter, which, according to the description (Fl. Cap. p. 593) seems to be really distinct in its shorter peduncles and in its stipules being only of the length of the petiole. Our plant, at least differs in these points from *H. virgata*, whereas it exactly coincides with *H. angustifolia*, DC.

30. *Crotalaria Capensis, Jacq.* H. Vindob. 3, t. 64, E. Mey. comm. p. 23.—*C. arborescens*, Lam. DC. prodr. 2, p. 130.—Ad latera collium prope flum. Umgeni, Port Natal (V. c.), Nov. 1839. Krauss, n. 122.

β. obscura, E. Meyer, l. c.—Ad sylvarum margines prope Knysna Rivier, distr. George (IV. b.) Febr. 1839. Krauss, No. 924.

31. *C. globifera, E. Mey.* comm. p. 24.—In radicibus montium Tafelberg, Port Natal, alt. 1000-1500 ped. (V. c.) Aug., Sept. Oct. 1839. Krauss, n. 341 et 440.—Our plant differs somewhat from Drège's in having a thicker raceme and an angulate rachis, nor are the leaves exstipulate, and the leaflets longer than the petiole, as stated in Meyer's diagnose; nevertheless we have no doubt of its belonging to the same species. It much resembles *Dichilus strictus*, E. Mey. which, however, will be readily distinguished by its carina being almost straight and without a beak.

32. *Crotalaria lanceolata, E. Mey.* comm. p. 24.—In graminosis prope flum. Umlaas, Port Natal (V. c.), Nov. 1839. Krauss, n. 107 et 469.

33. *C. Natalitia, nob.*—Fruticosa, ramis foliisque adpresse pilosiusculis; stipulis falcato-lanceolatis, acutis, patulis, petiolo parum brevioribus; foliolis ternis subsessilibus petiolo subæqualibus, cuneato-oblongis, emarginatis, submucronatis, intermedio paulo longiore; racemis terminalibus paucifloris, floribus glabris; calycis dentibus subfalcatis, acutis, tubum latum æquantibus; carina breviter et obtuse acuminata superne villosa; legumine glabro, stipitato, turgido, brevirostri, polyspermo.

Ad sylvarum margines prope flum. Umlaas, Port Natal, (V. c.), Oct. 1839. Krauss, n. 339.

This seems to be very near *C. coluteoides*, Lam. dict. 2, p. 200. DC. prodr. 2, p. 131, n. 88, which, however, to judge from the description and from the figure quoted by De Candolle (Pluk. t. 185, f. 3), is distinguished by the leaflets being shorter than the petiole and attenuato-acute, and especially by the calyx having its upper lip subtruncato-bifid and the teeth of the inferior lip short and divaricate; whereas in our plant the 5 lobes of the wide cup-shaped calyx are almost of equal length (1 lin.), lanceolate and acute. Racemes without bracts, 8-12 flowered, pedicels 3-5 lines long. Flowers yellow, 6 lines long, vexillum complicated, roundish when expanded, scarcely longer than the alæ and carina, with two small pubescent callosities at the base; carina equal to the alæ, with a short almost blunt beak, densely bearded with short whitish hairs along the upper margin. Five longer stamens with linear anthers alternating with five shorter ones with oval anthers. Style longer than the stamina, pubescent at the top, stigma obtuse; ovary glabrous. Legumen, including its stalk (which varies from 1 to 2 lin. in length) 15-17 lines long, with a very short blunt beak, almost cylindrical, and scarcely attenuated at the ends, coriaceous, smooth, without conspicuous veins, sutures sharp, though scarcely prominent, the upper one straight, seeds numerous, oblong. Lateral folioles 4-5 lines long, terminal one about 2 lines longer, all of the same form and breadth (2-3 lines); they are rounded at the extremity and more or less, though never considerably, emarginate, generally with a minute, blunt and recurved mucro, the inferior surface is thinly pilose, the superior (except in the youngest state) quite smooth. Almost every axilla bears two similar but smaller leaves. Stipules 3 lin. long, ½-⅔ l. broad. Pubescence of the branches and petioles like that of the leaves, but more conspicuous.

34. *Stiza psiloloba, E. Mey.* comm. p. 32 ?—Inter frutices prope Uitenhage (IV. C. c.), Maj. 1839, Krauss, n. 925.—We have not seen either of Meyer's two species of this genus, to which, however, our specimens, though only in fruit, seem to belong, especially as to the peculiar habit, in which they perfectly agree with the description. Dr. Meyer does not mention the narrow wing at the superior margin of the fruit, which our specimens distinctly show, and by which they approach the genus *Lebeckia.* The latter, however, as well as *Rafnia* and *Pelecynthis,* which have a similar fruit, are quite different in habit.

35. *Sarcophyllum carnosum,* Thunb. DC. prodr. 2, p. 137,

E. Mey. comm. p. 32.—Ad radices montium prope Gnadenthal (IV. A.) Dec. 1838. Krauss, n. 921.—Inter frutices in arenosis planitiei Capensis, Ecklon. Un. itin. No. 676 (which Ecklon quite wrongly refers to *Lebeckia contaminata*, Enum. p. 192.)

36. *Aspalathus Kraussiana, nob.;* foliis 3-foliolatis, petiolo ad tuberculum reducto, foliolis subfalcato-lanceolatis, acutis, planis, coriaceis, nervosis, glabris, summis conformibus dorso margineque pilosis; capitulis terminalibus, sessilibus, involucro proprio nullo; calycis villosi dentibus subæqualibus, linearibus, acutis, tubo sublongioribus, dimidiam corollam superantibus; vexillo, alarum apice carinaque extus pubescentibus.

In solo lapidoso-arenoso prope Klein Rivier, distr. Zwellendam (IV. B. b.), Dec. 1838. Krauss, n. 821.

This species, at first sight, resembles very much *A. involucrata*, E. Meyer, comm. p. 38, which, however, differs in its broad bracts forming an involucrum around the flower-head. *A. venosa*, E. Mey. l. c. p. 39, is also nearly related, but has quite different leaves. *A. rugosa*, Thunb. Fl. Cap. p. 574, seems to differ by "foliis vix unguicularibus ellipticis, floribus terminalibus umbellatis subternis albicantibus," but it may be inaccurately described, and still, perhaps, belong to either of the species just mentioned. Our plant has rather strong, black and pubescent branches, dividing at the top into a few short umbellate twigs of a pale brownish colour. The leaves might almost be called simple and fascicled, from the nearly total absence of a petiole, which, indeed, is reduced to a mere tubercle (pulvinus), but they are truly and constantly 3-foliolate; leaflets 6-7 lines long, 1½-2 l. broad, obliquely lanceolate or cultriform (one margin being straight, or falcate), of equal length, marked with one conspicuous middle nerve and two lateral often indistinct and nearly marginal nerves. The uppermost (likewise 3-foliate) leaves which immediately surround the capitulum, differ in nothing from those just decribed, except in being not quite so cartilaginous, in their ciliated margins and slightly pilose back. At the base of the flowers, which are yellow and 5-6 lines long, there are small narrow lanceolate foliaceous bracteæ.

37. *A. cytisoides, Lam.* (1783), DC. prodr. 2, p. 143, n. 75. E. Mey.! comm. p. 39.—*A. cinerea* Thunb. (1794.) Ecklon et Zeyh.! enum. p. 198, (Walpers in Linnæa 13, p. 483.)—In graminosis ad latera mont. Gnadenthalberg, Zwellendam. (IV, A.) Dec. 1838. Krauss, n. 884.

38. *A. anthylloides, Linn.* DC. l. c. p. 142, n. 67. E. Mey.! comm. p. 39. Walp. l. c. p. 483.—In solo lapidoso-arenoso prope Klein Rivier, Zwellendam (IV, B, b.) Dec. 1838. Krauss, n. 878.

39. *A. heterophylla, Linn.* fil. DC. l. c. n. 58. E. Mey.! comm. p. 40. Walp. l. c. p. 481.—In arenosis planitiei Capensis (III, E. b.) Nov. 1838. Krauss, n. 923.

40. *A. argentea, Linn.* (non Thunb. nec DC. nec Eckl. et Zeyh. Cfr. Walpers in Linnæa 13, p. 485.)

β. glabriuscula, E. Mey.! comm. p. 43.—In solo lapidoso-arenoso montium prope Klein Rivier, Zwellendam (IV, B. b.) Dec. 1838. Krauss, n. 879.

41. *A. callosa, Linn.* DC. l. c. n. 70. E. Mey.! comm. p. 45.—Cum præcedente (altit. 1000-2000' !), legit Dr. Krauss, n. 882.

42. *A. laricifolia, Lam.* DC. l. c. p. 138, n. 5. (non Berg.) —Inter lapides ad radices montium Winterhoek, Outeniqua (IV, C. c.), Apr. Maj. 1839. Krauss, n. 876.—*A. hystrix L.* Lam. Ill. t. 620, f. 1, has quite the appearance of our plant, but with silky leaves. *A. verrucosa,* Thunb. also approaches it closely, but, according to Drège's specimens, differs in its elongated racemes and shorter lobes of the calyx.

43. *A. laricina,* DC. l. c. p. 141, n. 44.—*A. laricifolia,* Berg., Thunb., E. Mey. comm. p. 49. (non Lam.)—In solo argillaceo prope Gauritz Rivier, Zwellendam (IV, C. a.) Jan. 1839. Krauss, n. 892.—Our specimens differ from Bergius's very good description only in having glabrous flowers.—*A. galioides,* Berg. E. Mey. p. 48, is a very nearly allied spe-

cies, but distinct, according to Drège's specimens, in the subterminal flowers, and linear-lanceolate divisions of the calyx, etc.

44. *A. galeata, E. Mey.* comm. p. 49.—In solo lapidoso-arenoso montium prope Klein Rivier, Zwellendam (IV, B. b.) Dec. 1838. Krauss, n. 877. From *A. triquetra*, Thunb. which has very much the same general appearance, this species is widely different in the calyx.

45. *A. filifolia, E. Mey.* comm. p. 50. (excl. syn. Cfr. Walp. l. c. p. 487.)—In arenosis planitiei Capensis (III, E. b.) Nov. 1838. Krauss, n. 891.

46. *A. araneosa, Linn. Lamarck!* DC. l. c. p. 141, n. 48. E. Mey.! comm. p. 50.—Ad ripas flum. Baviaanskloof Rivier (IV, B. b.) Dec. 1838. Krauss, n. 883. (also Sieber, Fl. mixt. n. 21) A specimen collected by Baron Ludwig and communicated to us by Dr. Steudel, which we have compared, and found perfectly identical with those in Lamarck's Herbarium, agrees with those gathered by Dr. Krauss.

47. *A. chenopoda, Linn.* (Breyn. cent. t. 11. bona!) DC. l. c. p. 138, n. 9. E. Mey. comm. p. 50.—Ad latera montis Constantiaberg (III, D. b.) Sept. 1838. Krauss, n. 893.

48. *A. cinerascens, E. Mey.!* comm. p. 54.—*A. intermedia* et *chortophila*, Eckl. et Zeyh., fide Walp. in Linnæa 13, p. 500.—In summitate montium Winterhoek, Uitenhage (IV, C. c.) Maj. 1839. Krauss, n. 873.

49. *A. spicata, Thunb.* DC. l. c. n. 14. E. Mey.! comm. p. 55.—In lapidosis mont. Hottentotts-hollandsberge, alt. 1000'-2000' (III, D. a.) Nov. 1838. Krauss, n. 888. In Leuwenberg, Dec. 1826. Ecklon, Un. itin. n. 3!

50. *A. ericæfolia, Linn.* DC. l. c. n. 17. E. Mey! comm. p. 56. Walp. l. c. p. 495. (non Berg.)—In arenosis planitiei Capensis (III, E. b.) Nov. 1838. Krauss, n. 886 et 1263. In alt. II, mont. Leuwenkop, Ecklon, Un. itin. 72*b*!—I have examined the *A, mollis* in Lamarck's herbarium, and could hardly find any difference between it and Ecklon's specimens of *A. ericæfolia*, except in its having the lobes of the calyx a

little shorter and the pubescence of the branches somewhat longer.

51. *A. vermiculata, Lam.!* dict. 1, p. 288. DC. l. c. p. 141, n. 53. Walp. l. c. p. 496.—*A. thymifolia, var. β.* E. Mey. comm. p. 57.—*A. microphylla,* Steudel! mss. in Hb. nostro (non DC.)—In solo calcareo-arenoso planitiei Zoetendal's Valey, Caledon (IV, C. a.) Dec. 1838, Krauss, n. 831. Dr. Steudel's plant (from Baron Ludwig), which I have compared with Lamarck's own specimens, is perfectly the same as Dr. Krauss's. The species is quite distinct.

52. *A. spinosa, Linn.* Lam. ill. 620, f. 3! DC. l. c. p. 138, n. 1. E. Mey.! comm. p. 59. Walp. l. c. p. 502.—Ad sylvarum margines prope Umlaas Rivier, Port Natal (V, c.) Dec. 1839. Krauss n. 166. In solo argillaceo collium prope Knysna Rivier, George (IV, b.), Febr. 1839, idem, n. 890.

53. *A. corrudæfolia, Berg.* pl. Cap. p. 207. DC. l. c. n. 24. —In arenosis circa Kampsbaay (III, D. b.) Aug. 1838. Krauss, Hb. propr.—Our plant agrees in every respect with Bergius's excellent description, except in having the leaves minutely mucronate. The flowers are generally terminal, not axillary as stated by De Candolle, but sometimes they become at last lateral from the prolongation of a branchlet beyond the inflorescence.

54. *A. carnosa, Linn.* Lam. dict. 1. p. 289. (descr. bona!) DC. l. c. n. 30. E. Mey. comm. p. 60. Walp. l. c. p. 490.—In arenoso-lapidosis ad latera montium prope Simon's Bay (III, E. b.) Sept. 1838. Krauss, n. 894.

55. *A. elongata, E. Mey.* comm. p. 63 (haud Eckl. et Zeyh.) *A. Dregeana*, Walp. in Linnæa 13, p. 486.—In solo argillaceo-arenoso, Langekloof, distr. George (IV, B. c.) Krauss, n. 889.

56. *A. comosa, Thunb.* DC. l. c. n. 50. E. Mey. comm. p. 63.—In collibus prope George (IV, C. b.) Jan. 1839. Krauss n. 895.

57. *A. cephalotes, Thunb.* DC. l. c. n. 50. E. Mey. l. c.—Ad latera montium Hottentotshollandsberge (III, D. a.) Nov. 1838. Krauss, n. 887.

58. *A. ciliaris, Linn.* DC. l. c. n. 55. E. Mey. l. c. Walp. l. c. p. 489.—In arenosis planitiei Capensis (III, E. b.) Jan. 1839. Krauss, n. 809. Forma foliis glabris, summis tantum ciliatis.

59. *A. nivea, Thunb.* DC. p. 144, n. 83. E. Mey. comm. p. 64.—Ad latera collium prope Zwartkopsrivier, Uitenhage (IV, C. c.) Apr. 1839. Krauss, n. 880.—The legumen, which I think has not yet been described, is strongly compressed and like the leaves, silky, of a peculiar oblique ovato-lanceolate form, the inferior suture being almost straight or slightly curved, the superior strongly gibbous (protruded into a round angle) near the base, and then running out straight into the acute apex, sometimes crowned with the persistent falciform compressed acute and white style. It measures 6-7 lines in length, and (near the base) 2½ lines in breadth.

60. *Sphingium spicatum, E. Meyer!* comm. p. 66. *a. hirsutiusculum*, E. Mey.! *Melolobium spicatum*, Eckl. et Zeyh. enum. p. 190. Walp. l. c. p. 506.—*Dichilus spicatus,* E. Mey. in Linnæa 7, p. 154, fide Eckl. l. c.—In planitie Capensi (III, E. b.) Jul. 1838. Krauss, n. 853.

61. *Telina heterophylla, E. Mey.!* comm. p. 69.—*Ononis heterophylla*, Thunb. Fl. Cap. p. 586. *Lotononis heterophylla*, Eckl. et Zeyh. l. c. p. 177.—In arenis litoralibus in Zitzikamma (IV, C. b.) Mart. 1839. Krauss, n. 840.

62. *T. prostrata, E. Mey.!* comm. p. 69.—*Ononis prostrata,* Linn. Thunb.—*Lotononis vexillata,* Eckl. et Zeyh. enum. p. 176.—Ad latera montis Duyvelsberg (III, A. e.) Jul. 1838. Krauss, n. 854. (Ecklon Un. itin. n. 424 !)

63. *Chasmone baptisioides, E. Meyer!* comm. p. 71.—*Argyrolobium baptisioides*, Walp. in Linnæa 13, p. 506.—Ad latera montium Tafelberge, Port Natal (V. c.) Aug. 1839. Krauss, Hb. propr.

64. *Ch. tuberosa, nob.*—*Argyrolobium tuberosum,* Eckl. et Zeyh. enum. p. p. 188.—Herb. Krauss, propr., absque indicatione loci natalis.—A very distinct species, approaching the foregoing and likewise easily turning black in drying, but of a slender habit, with few-flowered racemes and solitary

1-flowered pedicels. The legumen becomes, at last, almost glabrous, 1½ inch long, 1 line broad. The tubercles of the root are of the size of a small pea, ovoid, acute at both extremities, brown, sessile, solitary, or perhaps fasciculate.

65. *Chasmone longifolia, nob.*—Suffruticosa, divaricato-ramosa; stipulis setaceis petiolo brevi paulo longioribus; foliolis elongato-linearibus, acutis, subæqualibus, utrinque canescenti-pilosis; racemis axillaribus et terminalibus elongatis, nudis, laxis; floribus subsecundis; calycis pilosi labio superiore indiviso v. demum 2-dentato, inferiore 3-dentato, dentibus brevibus; legumine lineari, fusco-villoso.

In summitate montium Tafelberge, Port Natal (V. c.) alt. 1000' Dec. 1839. Krauss, n. 214.

This seems to be nearly akin to *Argyrolobium angustifolium* Ecklon et Zeyh. l. c. p. 188, which, however, differs in the form of the stipules, folioles and in the inflorescence. *A. pauciflorum*, Ecklon et Zeyh. l. c. p. 186, which comes nearer to it, as to the leaves and stipules, is quite distinct in "pedunculis sub 2-floris folio brevioribus." The plant seems to reach the height of several feet, and shoots out slender branches from almost every axilla; they are cylindrical, slightly striated, and covered with the same short adpressed greyish hairs as the leaves, but become almost glabrous at their inferior part. Stipules 3 lines long, erect. Petiole scarcely exceeding 2 lines, leaflets 2-2½ inches long, 2-2½ lines broad, generally folded along the midrib. Racemes 3-8 inches long, the inferior (axillary) ones gradually longer, semipatent, without leaves or bracts, many-flowered; pedicels rather remote, all turned to the same side, 2-3 lines long, with two short linear bracteoles about the middle. Flowers 5 lines long. Calyx a little shorter than the corolla, deeply bilabiate, lower lip shortly and equally 3-toothed, upper lip at first undivided, ovate, acute, but visibly composed of two cohering lobes which afterwards separate at the top into two short teeth, so that the same flower, when young, will belong to Walpers's genus *Gamochilum*, and when fully developed, to his *Argyrolobium!* Petals black from exsiccation. Vexillum complicate, obcordato-oblong, pubescent on the back, with a short broad unguis and a minute transverse fold at the base of the lamina; alæ little shorter than the vexillum and scarcely longer than the carina, straight, oblong, obtuse, with a short auricula and unguis, bearing a few hairs near the end; carina semi-ovate, blunt; its petals quite distinct at the base, cohering at the extremity not only by the inferior but even by their superior margin. Sheath of the monadelphous stamens split upwards; at their free extremity the filaments are alternately filiform and linear, compressed (almost ligulæform); anthers all equal, oblongo-linear, cordate at the base. Ovary shortly stalked, slightly falcate, attenuated into a thin glabrous falcate style with a minute capitate stigma. The legume seems to become rather long, those of our specimens, though far from maturity, being already 1 inch long and scarcely 1 line in breadth.

66. *Chasmone Goodioides, nob.*—Fruticosa, ramis gracilibus, adscendentibus, glabris, apice parce pubescentibus; stipulis setaceis, petiolo brevioribus, patulis; foliolis subcoriaceis, obovatis, acutis v. breviter mucronatis, subæqualibus, petiolo longioribus, glabris, 1-nerviis, subaveniis; racemis terminalibus, brevibus, paucifloris, pedicellis setaceo-bibracteolatis; calyce corolla dimidio breviore, labio superiore 2-, inferiore 3-dentato; legumine lanceolato-lineari, stipitato, sericeo-puberulo.

Inter lapides ad latera montium Winterhoeksberge, alt. 2000', Uitenhage (IV. C. c.) Apr. 1839. Krauss, n. 929.

This comes close to *C. cuneifolia*, E. Mey. comm. p. 71, but is certainly dictinct, especially in the form of the folioles which, besides, are of a peculiar, half fleshy texture, and show, when held against the light, numberless transparent points (which, however, are by no means produced by glands, but merely owing to the peculiar parenchyma); they are 5-6 lines long and 3-4 lines broad; and when quite young, are covered with a minute and scattered pubescene. The stipules attain scarcely one line in length, while the petiole varies from 2 to almost 5 lines. Flowers 3-6, in short, often corymbiform, racemes, yellow; pedicels about as long as the calyx (2-3 lines.) Calyx pubescent, the upper lip shorter than the lower; petals glabrous. Legumen (young) about 1 inch long, 2 lines broad, with a stalk of the length of the calyx-tube, the style strongly falcate, often almost geniculate.

67. *Ch. holosericea, E. Mey.!* comm. p. 72.—*Argyrolobium sericeum,* Eckl. et Zeyh. enum. p. 184.—*Gamochilum sericeum,* Walpers in Linnæa 13, p. 510.—In solo argillaceo-arenoso, Langekloof (IV, B. b.) Febr. 1839. Krauss, n. 920.

β. incana, nob.—Foliis laxiuscule cano-pilosis, novellis tantum sericeis, racemis laxiusculis, calyce cano-tomentoso.—In lateribus montium Baviaanskloof (IV, B. b.) Dec. 1838. Herb. Krauss, propr.

Our plant, which is exactly the same as Dr. Meyer's, and most probably also as Ecklon's, does not at all agree with the essential character of Dr. Walpers's genus *Gamochilum,* the upper lip of the calyx being distinctly bifid, and even more deeply so than in the preceding species; but, indeed, sometimes the two lobes, though plainly distinguishable, remain a long time coherent, or perhaps do not separate at all, which may be the case in several species, as it certainly is in our *Ch. longifolia.* We cannot, therefore, consider the genus *Gamochilum* as sufficiently distinct. Our var. *β.* is intermediate between *Ch. holosericea* and *obcordata;* the latter, which we have not seen, may be, perhaps, rather a variety or mere form of the same species, as in *Ch. holosericea* the form of the leaflets and inflorescence is almost the same.—Flowers yellow, 6 lines long.

68. *Ch. sessiliflora, E. Mey.* comm. p. 72 (probably γ.) In solo argillaceo-arenoso per totum distr. Langekloof, George (IV, B. c.) Febr. 1839. Krauss, n. 919.—*Argyrolobium candicans,* Eckl. et Zeyh. en. p. 186, to which Dr. Walpers refers Meyer's plant (without having seen it), seems to differ by longer petioles, and especially by "stipulis ovato-acuminatis basi subconnatis folio vix brevioribus."—*A. stipulaceum,*

Eckl. et Zeyh. l. c,, which, too, appears nearly related, differs also in the stipules and in the 1-3-flowered peduncles.

69. *Ch. barbata, nob.*—Pumila, ramis stipulis foliis calycibus et leguminibus pilis longiusculis patentibus hispidulis; stipulis ovato-lanceolatis, inter se et cum petiolo semiconnatis, persistentibus; foliolis obovato-oblongis, acutis v. subtruncatis, submucronulatis, petiolo longioribus; pedunculis subterminalibus, brevibus, 1-2-floris, apice 2-bracteolatis; calycis labio superiore semibifido, inferiore 3-fido; leguminibus lineari-lanceolatis.

Ad ripas flum. Koega, Uitenhage (IV, C. c.) Apr. 1839. Krauss, n. 928.

A very distinct species, of which we have seen only small specimens in fruit, but which, as to the habit and calyx, undoubtedly belong to this genus. Folioles 4-5 lines long, 2½-3 lines broad near the extremity, cuneate, commonly complicated, smooth on the upper face, with a few scattered hairs (like those on the margin) on the inferior surface; petiole 2-3 lines long. Peduncles 2-4 lines long; calyx 5 lines long, lobes acute, lanceolate. Legumen nearly twice the length of the calyx, almost 2 lines broad, valves slightly convex, at last spirally convolute; seeds numerous, globose.

70. *Ch. pumila, nob.—Argyrolobium pumilum,* Eckl. et Zeyh. enum. p. 185. Walp. l. c. p. 508.—Herb. Krauss, propr. (without indication of the locality.) The petioles vary in length from 1 to nearly 4 lines, but are usually shorter than the folioles. Flowers pale yellow. Calyx 3 lines long, little shorter than the corolla; upper lip deeply bifid, almost bipartite, inferior 3-toothed. Legumen 15-17 lines long, 2 l. broad, rather flat, shortly pubescent (scarcely silky.)

71. *Chasmone Andrewsiana, E. Mey.!* comm. p. 74.—*Cytisus tomentosus,* Andr. Bot. Repos. t. 237.—*Dichilus ciliatus,* Spreng. syst. suppl. p. 20. Eckl. et Zeyh. enum. p. 183. —*Goodia? polysperma,* DC.! prodr. 2, p. 118.—*Trichasma ciliatum,* Walpers in Linnæa 13, p. 511.

β. *umbellata, E. Mey.* l. c.—In sylvis primitivis regionis Zitzikamma, (IV, C. b.) Mart. 1839. Krauss, n. 917.

72. *Ch. splendens, nob.*—Ramis sericeo-incanis; foliis stipulisque coriaceis, supra demum glabris, subtus dense sericeo-pilosis; stipulis obliquis, ovatis, subacutis; foliolis oblongis v. obovatis, petiolo triplo longioribus; pedunculis terminalibus, elongatis, apice umbellatim 2-4-floris; calycis sericeo-pilosi corolla parum brevioris labio superiore 2-partito, inferiore longiore 3-fido; leguminibus lanceolatis, sericeis.

Ad latera montium prope Klein Rivier, Zwellendam, (IV, B. b.) Dec. 1838. Krauss, n. 927.

A most distinct species, of very elegant foliage, closely related to *Ch. lanceolata*, E. Mey. comm. p. 75, but easily distinguishable, at first sight, by its much shorter petioles and not acuminate stipules. These are generally of the length of the petioles (3-4 lines), sometimes a little longer or much shorter; at their broadest part they measure 2-3 lines, they are inserted above the inferior extremity of their inner and straight margin, their outer margin being strongly curved. Like the folioles of the leaves, they have the margins recurved, their inferior (dorsal) surface covered with a splendid satin-like white or pale yellow pubescence, the upper surface smooth and somewhat shining, but when quite young it is also more or less silky. The folioles vary in form and size, being now oblong-lanceolate, 1 inch long and 3-4 lines broad, and now obovate, 10-12 lines long and 4-7 lines broad, but often, especially at the lower part of the branches, they are scarcely half that size. Peduncles 1½-2¼ inches long; pedicels 2-3 lines long, erect, bearing two linear short bracteoles. Calyx 5-6 lines long, upper lip split below the middle in two lanceolate lobes, lower lip a little longer, its 3 lobes about 1 line long. Corolla pale yellow, the vexillum puberulous outside. Legumen (not ripe) 1½ inch long, 2½ lines broad, much compressed, with thick blunt margins, not torulose.

73. *Lipozygis umbellata, E. Mey.!* comm. p. 76.—*Ononis umbellata*, Linn. DC. prodr. 2, p. 167, n. 92.—*Polylobium truncatum* et (?) *sparsiflorum*, Eckl. et Zeyh. enum. p. 181.—In radicibus montis Tafelberg (III, E. b.) Sept. 1838.

Krauss, n. 856.—We are inclined with Mr. Bentham (Annal. des Wiener Mus. 2, p. 142) to divide this genus into three, by referring some of the species (among which are the present and the following) to Ecklon's *Polylobium*, and others to *Leptis* of the same author, while only a few would remain under Meyer's generic appellation.

74. *L. corymbosa, E. Mey.!* comm. p. 79. — *Polylobium corymbosum,* Steudel Nomencl. ed. 2.—In summitate mont. Tafelberge, Port Natal, alt. 2000-2500' (V, c.) Aug. 1839. Krauss, n. 436.

75. *L.* (*Leptis*) *Kraussiana, nob.*—Herbacea, humifusa, multicaulis, subdichotome ramosa, ubique (excepta foliorum pagina superiore et corolla) adpresse hirsuto-pilosa; stipulis (solitariis) linearibus, acutis, erectis, petiolum æquantibus; foliolis parum longioribus, spathulato-linearibus, acutiusculis; pedunculis oppositifoliis, petiolum æquantibus, apice 1-2-floris, pedicellis brevibus basi minute 2-bracteolatis; leguminibus turgidis, polyspermis, ad suturas lævibus.

In solo argillaceo ad radices mont. Winterhoeksberge, distr. Uitenhage, alt. 1000' (IV, C. c.) Jun. 1839. Krauss, n. 875.

A little plant, agreeing with none of the species we have seen in Drège's collection, approaching *L. humifusa, Radula, tenella* and *falcata,* but distinct from all, either in the foliage or in the inflorescence and fruit. Folioles 3-4 or rarely 6 lines long, 1 line broad; stipules and petiole rarely exceeding 3 lines, sometimes shorter; peduncles varying in length between 2 and 6 lines, usually equalling the petiole; pedicels as long as the calyx (2½ lines) or a little shorter; calyx deeply 5-cleft, lobes nearly as long as broad, narrow-lanceolate, acute, one third shorter than the pale yellow corolla; vexillum subcordato-orbiculate, shortly pointed, with a short unguis, and a few hairs outside towards the top; alæ shorter than the blunt carina, rounded at the end; tube of the stamens split; legumen 5-6 lines long, almost 2 lines broad, scarcely falcate, the sutures slightly prominent, without asperities; valves convex, not torose; style persistent, falcate, distinctly geniculate at the base; seeds (not yet ripe) numerous, at least 20.

76. *P.* (*Leptis*) *argentea, nob.*—Herbacea, procumbens? multicaulis, tota (exceptis corolla et leguminibus) argenteo-sericea; foliolis linearibus, acutis, stipula (unilaterali) conformi majoribus, petiolo vix longioribus; pedunculis oppositifoliis, solitariis, 1-floris, petiolum subæquantibus; leguminibus oblongis, turgidis, hispidulo-villosis (haud sericeis).

Cum præcedente Maj. 1839, legit Krauss, n. 874. A very small plant (the stems in our specimens not exceeding three inches, with very crowded leaves and a fine whitish satin-like pubescence. Leaflets a little smaller, distinctly narrower than in the preceding species. Structure of the flower and legumen the same. Corolla pale yellow, as long again as the calyx, vexillum ovate, pubescent at the top. Legumen not exceeding 4 lines in length, 1⅔ l. broad.—Perhaps our plant may be *P. tenella β sericea,* E. Mey. comm. p. 78, which we have not seen, yet it differs from it in not having erect stems, nor cuneate folioles, nor a quite glabrous corolla. *Leptis filicaulis,* Eckl. et Zeyh. enum. p. 175, to which Steudel (nomencl. ed. 2) refers Meyer's plant, does not at all agree with ours.

77. *Trifolium angustifolium, Linn.* E. Mey.! comm. p. 90. —In arenosis planitiei Capensis (III, E. b.) Nov. 1838. Krauss, n. 852. (Un. itin. n. 806!)

78. *Melilotus parviflora,* Desf. E. Mey.! comm. p. 91.—Ad vias prope mont. Tygerberg (III, D. a.) Maj. 1838. Hb. Krauss, propr.

79. *Medicago denticulata, Willd.* E. Mey. l. c. p. 92.—Cum præced. Krauss, Hb. propr.

80. *Psoralea arborea, Sims.* DC. prodr. 2, p. 216, n. 2. E. Mey. comm. p. 82.—In sylvis primitivis, terræ Outeniqua (IV, C. b.) Jan. 1839. Krauss, n. 897.

81. *P. pinnata, Linn.* Lam.! DC. l. c. n. 3, E. Mey.! l. c. —In arenosis planitiei Capensis (III, E. b.) Nov. 1838. Krauss, n. 901. (Ecklon, Un. itin. n. 657!)

82. *P. verrucosa, Willd.* DC. l. c. n. 5. E. Mey.! l. c. p. 83.—Ad sylvarum margines prope Knysna Rivier, George (IV, C. b.) Jan. 1839, Krauss, n. 899.

83. *P. fascicularis,* DC. l. c. n. 10. E. Mey. l. c.—Inter

frutices mont. Tygerberg (III, D. a.) Maj. 1838. Hb. Krauss, propr.

84. *P. Kraussiana, nob.*—Glabra, ramis strictis, erectis, lineatis, dense foliosis; stipulis lanceolato-setaceis, petiolum foliolis triplo breviorem æquantibus, foliolis rigidulis, spathulato-linearibus, subtrigonis, cum mucrone rectis, 1-raro 2-jugis cum impari; floribus in apice ramulorum spicato-capitatis, breve pedicellatis, bracteolis 2 semi-connatis flori approximatis, calyce glabro subæqualiter 2-labiato.

In solo argillaceo ad latus australe montis Tafelberg (III, A. e.) Sept. 1838. Hb. Krauss, propr.

This seems to be related to *P. triflora*, Poir. DC. l. c. n. 6, and to *P. affinis*, Eckl. et Zeyh. en. p. 774, both which, however, differ in having axillary flowers, and, besides, in the form and number of the folioles, etc. In our plant the leaves are 3-foliolate (except a very few of the lower ones which are pinnately 5-foliolate) and the leaflets are but 3-6 lines long, and ½ line broad; they are acuminated into a straight sharp mucro, and their common petiole and stipules vary from one to two lines in length. Flowers in very short capituliform terminal spikes (never axillary!) fine blue, quite of the form and size of those of *P. verrucosa*. Calyx brownish, like the leaves and branches densely punctate with glands, its lobes, especially of the upper lip, ciliated with short black hairs.

To this we refer *P. tenuifolia, Ecklon et Zeyh.* enum. p. 225. (Un. itin. n. 658!) which differs from Dr. Krauss's specimens only in having the top of the branches and the calyx slightly pubescent, the uppermost leaves sometimes unifoliolate, the folioles a little longer, and the flowers more remote and forming a very short terminal raceme. We must doubt whether it be really Linné's *P. tenuifolia*, which is described as having "rami læves, foliola lineari-lanceolata" and "pedicelli axillares."—*P. filiformis Poir.!* (according to Poiret's autograph specimen in Lamarck's Herbarium, which we have compared with Ecklon's, and to which is ascribed as a synonym "*P. angustifolia Hort. Kew.*") is, indeed, very like our plant, but certainly distinct in its axillary flowers and its folioles of almost double the length.

85. *P. Harveyana, nob.*—Fruticosa, glabra, ramis adscendentibus; foliis 3-foliolatis, patentibus, rigidulis, foliolis spathulato-linearibus complicatis recurvo-mucronatis, stipulis brevissimis petioloque longioribus; racemis terminalibus, brevissimis, bracteolis 7 semi-connatis, flori approximatis; calyce glabro, labio inferiore productiore.

Ad latus orientale montis Tafelberg, alt. 1000' (III, A. e.) Sept. 1838. Krauss, n. 898.

A very pretty shrub, perfectly distinct from all other species I have hitherto seen. From *P. Kraussiana*, with which it has some resemblance, it differs by more diverging branches, shorter stipules (scarcely 1 line long) and folioles rarely attaining, and never exceeding, 3 lines in length; the latter differ also in form, being not trigonous, but folded on their middle nerve, truly cuneate, broadest at the top, (2-½ lines) which is not attenuated but rounded, truncate or almost emarginate, and abruptly pointed with a recurved mucro. The flowers, moreover, are a little larger, more numerous, and they form true, though very short, corymbiform racemes, the inferior pedicels growing gradually longer and attaining the length of 4-5 lines, whereas in *P. Kraussiana* they are scarcely half so long and the uppermost flowers are almost sessile. Finally, the calyx has broader lobes, the lowest of which is manifestly longer than the others. Lateral and inferior lobes of the calyx broad, ovate, acuminate, the latter complicated, upper lip shortly bifid. The colour of the corolla and calyx, and the glandular punctuation of the plant are the same as in the species above mentioned.

86. *P. aphylla, Linn.* Lam.! DC. l. c. p. 217, n. 12. E. Mey.! comm. p. 84. Eckl. et Zeyh. en. p. 226.—*P. Jacquiniana*, Eckl. et Zeyh. l. c. (fide specim. Un. itin. n. 47 !)—In arenosis et turfaceis planitiei Capensis (III, E. b.) Sept.—Nov. 1838. Krauss, n. 902 et 903.

87. *P. decumbens, Ait.* DC. l. n. 14. E. Mey. ! comm. p.

86.—Ad latera mont. Tygerberg (III, A, e.) Nov. 1838. Krauss, n. 850 (Un. itin. n. 666! Krebs, n. 84.)

88. *P. densa, E. Mey!* l. c. *P. stachyera*, Eckl. et Zeyh. en. p. 230? ex Walpers in Linnæa 13, p. 514. In arenosis planitiei Capensis (III. E. b.) Nov. 1838. Krauss, n. 896.

89. *P. capitata Linn. fil.* DC. l. c. n. 27, E. Mey! l. c. p. 88.—In solo argillaceo arenoso prope flum. Knysna, George (IV. C. b.) Jan. 1839. Krauss, n. 900. Un. itin. n. 661! Krebs n. 86!

90. *Indigofera Kraussiana, nob.*—Fruticosa, glabra, ramis adscendentibus, haud spinescentibus; foliis 1-foliolatis, petiolatis, coriaceis, spathulato-v. obovato-oblongis, ex apice rotundato minute mucronulatis; stipulis minutis, acutis; racemis axillaribus, pancifloris, folio vix longioribus; calycis canescentis lobis obtusiusculis.

In solo argillaceo prope montes Winterhoek, Uitenhage (IV. C. c.) Mart. 1839. Dr. Krauss, n. 845.

Easily distinguishable, by the above diagnose, from Dr. Meyer's *I. nudicaulis* and *dumosa*, as well as from Thunberg's *I. filifolia, depressa* and *ovata*, which are, to our knowledge, the only hitherto described Cape species with unifoliolate leaves: *I. axillaris* E. Mey. (Linnæa 7, p. 166) being, according to Ecklon, the same as *Amphithalea virgata*. (See our obs. nnder *Amphithalea Kraussiana*.) Except the calyx and the scarce and minute pubescence of the extremity of the branches, and on the back of the vexillum, our plant is entirely glabrous. Branches slender, rather divaricate, but bending upwards at their extremity, the cicatrices of the leaves tuberculiform. Stipules scarcely one line long, triangular, acute, deciduous. Petiole 1-2½ lines long, articulating with the foliole which is flat, 4-6 lines long, 2-3 lines broad, generally broader towards the summit, and frequently cuneate; besides the middle nerve, they show but rarely and very indistinctly a few lateral veins. The colour of the foliage is a pale, livid, greyish or glaucous green. Flowers scarcely more than 2 lines long, pale pink? pedicels but half as long, bracts minute and deciduous.

91. *I. rigescens, β. inermis, E. Mey.!* comm. p. 94. *I. denudata,* Eckl. et Zeyh. enum. p. 233 (non Jacq.) fide Walpers in Linnæa 13, p. 519 (an Linn. fil.?) In solo argillaceo-arenoso prope Kromme Rivier, distr. Uitenhage (IV. C. c.) Febr. 1839. Krauss, n. 828. From this, *I. spinescens* E. Mey. comm. p. 93, differs but slightly in its (constantly?) spinescent branches, smaller folioles (1-1½ lines long, but half the length of those of our plant) and "racemis folio parum longioribus hirtis" (in our plant they are more than twice as long as the leaves, and scarcely pubescent)."

92. *I. incana, Thunb.* DC. prod. 2. p. 232, n. 109. E. Mey.! comm. p. 96. Eckl. et Zeyh. en. p. 237 (ex cit. Un. itin. n. 425!) *I. procumbens,* Hort.! (non Linn.) Prope Constantiam (III. D. b.) Sept 1838. Krauss, n. 833.

93. *I. discolor, E. Mey.* comm. p. 97.—In arenosis planitiei Capensis (III. E. b.) Sept. 1838. Krauss, n. 835. Our plant differs from Drège's (which we have not seen), only in having folioles generally more than twice as long as the petiole (4-5 lines long) and the racemes usually quite straight. *I. porrecta* Eckl. et Zeyh. en. p. 234, to which Dr. Walpers refers Drège's plant, though without having seen it, (Linnæa 13, p. 521) also differs somewhat from ours by "stipulis setaceis reflexis," and "petiolo folium æquante." But these differences are of very little, if any, value.

94. *I. digitata, Thunb.* DC. l. c. p. 231, n. 100. E. Mey. comm. p. 98. Cum præced. Nov. 1838. Krauss, n. 840.

95. *I. filiformis, Thunb.* DC. l. c. n. 96. *β. planifolia,* E. Mey! comm. p. 98.—Ad latus orientale montis Constantiaberg (III. D. b.) Sept. 1838. Krauss, n. 834.

96. *I. sulcata,* DC. l. c. n. 94, E. Mey.! l. c. Eckl. et Zeyh.! enum. p. 240.—In collibus prope Port Natal (V. c.) Krauss, n. 310.

97. *I. brachystachya, E. Mey.!* in Linnæa 7, p. 168; comm. p. 98.—*I. angustifolia, Thunb. (non Linn.) β. brachystachya,* DC, l. c. n. 93.—In summitate mont. Outeniquaberge, distr. Uitenhage, (IV. C. b.) Mart. 1839. Krauss, n. 829.

98. *I. sarmentosa, Linn. fil.* E. Mey. comm. p. 99. *β. microphylla,* Lam. DC. l. c. n. 99. In planitie Capensi (III. E. b.) Nov. 1838. Krauss, n. 1264.

99. *I. coriacea, Ait.* DC. l. c. n. 98. E. Mey.! comm. p. 100.—“ *Ononis Mauritanica, L.*” Herb. Lamarck! *Indigofera Mauritanica,* Thunb. Eckl. et Zeyh.! en. p. 238, Walpers in Linnæa 13, p. 523. Ad latus occid. mont. Duyvelsberg (III. A. e.) Jan. 1838. Krauss, n. 837. (Un. itin. n. 429! Sieber Fl. Afr. mixt. n. 18!)

100. *I. alopecuroides,* DC. l. c. n. 97. E. Mey.! comm. p. 100. In solo argillaceo prope Caledon (IV. B. b.) Dec. 1838. Krauss, n. 827.

101. *I. Candolleana, nob.*—Fruticosa, ramis patentibus dense foliosis foliisque junioribus utrinque incanis, adultis minute strigillosis: foliis sessilibus 4-5-foliolatis patentibus, foliolis obcordatis recurvato-mucronulatis; racemis axillaribus paucifloris, folio triplo longioribus; leguminibus subcylindricis, glabris.

Locis arenosis prope Berg Rivier (III. D. a.) Jul. 1838. Krauss, n. 838. This we should have taken for *I. Burchellii,* DC., with which it seems to agree in every point, except that the latter is said to have petiolate leaves, of which our plant shows no trace, wherefore we must consider it a distinct, though nearly allied, species. *I. Burchellii,* of E. Meyer (comm. p. 106), is most probably also different from De Candolle's, its folioles being constantly alternating, and consequently not digitate. “ Should our conjecture prove founded, we would propose to name Dr. Meyer's species *I. Hookeriana.* As to the inflorescence (which is unknown in De Candolle's species), it is widely different from our plant, the flowers forming a capitato-spicate raceme, shorter than the petiole. Our plant has the habit and folioles of *I. coriacea,* but much smaller flowers and a shorter fruit.

102. *I. secunda, E. Mey.!* comm. p. 102.—In solo argillaceo prope Knysna Rivier, distr. George (IV. C. b.) Jan. 1839. Krauss, n. 832.

103. *I. eriocarpa, E. Mey.!* l. c. p. 103.—In solo argillaceo

prope Pieter Mauritzburg, Port Natal (V. c.) Sept. 1838. Krauss, n. 373.—Dr. Walpers (Linnæa 13, p. 524) refers this, though without having seen it, to *I. pauciflora*, Eckl. et Zeyh. en. p. 244, which, however, differs considerably "foliis subsessilibus, stipulis foliolum subæquantibus, racemis folio vix longioribus," etc. To us it seems more nearly related to *I. nana* E. et Z. l. c. p. 242, and *I. tristis* E. Mey. l. c. p. 101, both of which, however, differ materially from it.

104. *I. cytisoides, Thunb.* DC. l. c. n. 89. E. Mey.! comm. p. 105.—Ad latera montis Duyvelsberg, alt. 2000′ (III. A, e.) Jul. 1838. Krauss, n. 836.

105. *Tephrosia* (*Brissonia*) *oblongifolia*, E. Mey.! comm. p. 108.—In summitate mont. Tafelberge, Port Natal (V. c,) Dec. 1839. Krauss, n. 174.

106. *T.* (*Brissonia*) *glomeruliflora, nob.*—Suffruticosa, erecta, canescens; stipulis lanceolatis, petiolo brevioribus; foliolis 8-10-jugis, lanceolatis, mucronato-acutis, lineato-venosis; pedunculis terminalibus et axillaribus folio longioribus; floribus in glomerulos interrupte spicatos dispositis, glomerulis 2-3-floris bractea ovata acuta demum decidua fultis, vexillo extus sericeo; legumine margine pubescente. Prope Port Natal (V. c.) Nov. 1839. Hb. Krauss, propr.

The pubescence of the whole plant is greyish, slightly silky on the back of the vexillum, and on the under surface of the leaves, shorter and nearly tomentose on the upper surface, branches and calyx. Stipules 4-5 lines long, lanceolate, acuminate, membranaceous, lineately veined, like the bracteæ which are much shorter and broader, ovate, acute or acuminate. The whole petiole is about 2-2½ inches long, bearing 8-10 pairs of generally opposite folioles from about 4-6 lines above its base. Folioles all nearly equal, about 1 inch long and 2-2½ lines broad, with a very short partial petiole, attenuated at both extremities with a short mucro; venation as usual in this genus. Peduncles more or less distinctly angular, generally leafless and simple, the terminal one longer, and divided intoa few simple diverging branches. Glomeruli at first approximate, enveloped in their bracts, and with almost sessile flowers, which are afterwards more or less remote, and borne on pedicels of several lines in length. Flower 8-10 lines long, pale pink; calyx wide, scarcely two lines long, almost equally 5-fid, teeth triangular, acute, the lowest a little longer, the two upper ones less deeply divided than the rest. Fruit unknown. There is no species of the genus with which I am acquainted to which this bears any particular resemblance.

107. *Tephrosia* (*Brissonia*) *longipes, nob.*—Suffruticosa, erecta, subcanescens, ramis angulatis; stipulis setaceis, petiolo brevioribus; foliolis 8-10-jugis, linearibus, complicatis, mucronulato-acutis, supra glabris; racemo terminali folia superante longe pedunculato, floribus intra bracteas angustas paucis fasciculatis, fasciculis remotis, calyce, vexilli dorso et legumine lineari recto fulvo-pilosis.

In graminosis ad latera montium Tafelberge, Port Natal, alt. 2500′ (V. c.) Jan. 1839. Krauss, n. 20.

A most distinct species, somewhat akin to *T. linearis*, Pers. and *T. discolor*, E. Mey., which, however, differ in having but 4-6 pairs of much shorter and obtuse folioles, and in their bracts, pubescence, etc. In our plant the leaves are about 6 inches long, and the folioles 1½-2 inches in length by 1-1½ line in breadth. Stipules 4-5 lines long, scarcely ½ line broad at the base. Flowers a little smaller than in *T. glomeruliflora*, pink; calyx nearly the same as in the latter, the lower lobe a little longer. Legumen above 2 inches long, 2 lines broad, strongly compressed, with blunt sutures and a short beak, slightly torose.

108. *Tephrosia* (*Reineria*) *Kraussiana, nob.* — Fruticosa, erecta, corymboso-ramosa, piloso-canescens; stipulis lineari-setaceis, petiolo brevissimo longioribus; foliolis 7-10-jugis, linearibus, complicatis, recurvo-submucronatis; racemis terminalibus, pedunculatis, laxiusculis, folio duplo longioribus, floribus in bractearum setacearum axillis 2-3 fasciculatis. In graminosis ad latera mont. Tafelberge, Port Natal (V. c.) Nov. 1839. Krauss, n. 40.

Branches straight, erect, sulcate or angular, especially at the extremity. Stipules 3-4 lines long. The whole petiole

1½ inch long, bearing opposite folioles from about 1 line above its base; folioles 8-10 lines long, scarce 1 line broad, complicated, the point always more or less recurved and obsoletely mucronate. Racemes about 3 inches long, all reaching the same height; pedicels filiform 1-2 lines long; flowers scarcely longer, white? calyx campanulate, almost equally 5-fid, lobes lanceolate acuminate; vexillum pubescent outside. The pubescence of the whole plant is greyish and not silky. This species approaches in some points to *T. angulata, amœna* and *polystachya,* E. Mey. comm. p. 190, but differs in the form and proportions of its folioles, inflorescence, pubescence, etc.

109. *T.* (*Reineria*) *canescens, E. Mey.!* comm. p. 109.—In littore arenoso prope Port Natal (V. c.) Feb.1 840. Krauss, propr.—Pubescentia pulchre argenteo-sericea.

110. *T.* (*R.*) *Capensis, Pers.* DC. prodr. 2, p. 252, n. 37. α. et β. E. Mey.! comm. p. 110. In umbrosis ad latera montis Duyvelsberg (III. A. e.) Jul. 1838. Krauss, n. 849.

111. *Apodynomene grandiflora, E. Mey.!* comm. p. 111.—*Tephr. grandifl.* Pers, DC. l. c. n. 20.—Ad sylvarum margines in Zitzikamma (IV. C. b.) Mart. 1839. Krauss, n, 918.

112. *A. macropoda, E. Mey.!* comm. p. 112. a.—In solo argillaceo inter flumina Umslutie et Umgani, et prope Pieter Mauritzburg, Port Natal (V. c.) Jun.-Sept. 1839. Krauss, n. 244 et 451.

113. *Lessertia astragalina, nob.*—Suffruticosa? caulibus subsimplicibus, angulato-sulcatis, glabris; stipulis membranaceis, ovato-lanceolatis, petiolo brevi longioribus; foliolis 10-14-jugis, oblongis v. obovatis, truncatis v. emarginatis, mucronulatis, ciliolatis; racemis terminalibus et axillaribus longe petiolatis, oblongis, laxiusculis; calyce pilosiusculo, basi bibracteolato, dentibus obtusiusculis.

In arenosis planitiei Capensis (III. E. b.) Sept. 1838. Krauss, n. 857. This looks very much like *L. pulchra,* DC., which, nevertheless, according to Drège's specimens, certainly differs, being smaller in every part, and having only 6-7 pairs of folioles, shorter pedicels, etc. *L. sulcata* E. Mey., *macrostachya* DC., and *venusta* Eckl. et Zeyh., which also approach our plant, differ from it, as all other species hitherto described, in the number and form of the folioles, etc. Our plant seems to be scarcely suffrutescent, and the stem is ascendant, but not flexuose. Stipules 3-4 lines long, nearly 2 l. broad at the base, erect. Leaves 1½-2½ inches long; leaflets opposite or alternate, 3 lines long, 1½-2 l. broad, with a distinct but very short partial petiole and minute mucro; the terminal leaflet generally equal to the lateral ones. Racemes many-flowered; bracts membranaceous, white, as long as the pedicels (2 lines.) Flowers 4-5 lines long, pale purple or pink? calyx not quite half as long as the corolla, its lobes of equal length, the two upper ones less deeply separated. Vexillum broadly obcordate, reflexed at the sides: alæ and carina of equal length, the latter tipped with deep purple. Ovary stalked, linear, with 6-8 ovules.

114. *L. annua*, DC. prodr. 2, p. 271, n. 1. E. Mey. comm. p. 117.—Locus natal. propr. ignotus. Hb. Krauss, propr.

115. *L. falciformis*, DC. l. c. n. 7.—*L. minuta*, E. Mey. comm. p. 119.—In solo argillaceo prope Winterhoek, Uitenhage (IV. C. c.) Maj. 1839. Krauss, n. 841.

116. *Sutherlandia frutescens*, *R. Br.* DC. l. c. p. 273. E. Mey.! comm. p. 121.—Forma inter *α* et *β* media. In solo argillaceo mont. Tygerberg (III. D. a.) Sept. 1838. Krauss, n. 859.

117. *Zornia Capensis*, Pers. DC. l. c. p. 317, n. 11. E. Mey.! comm. p. 122.—Ad sylvarum margines prope Port Natal (V. c.) Oct. 1839. Krauss, n. 409.

118. *Nicolsonia Caffra*, *E. Mey.!* p. 123.—In planitie prope Umlaas Rivier, Port Natal (V. c.) Jan. 1840. Krauss, n. 143. Planta procumbens, fide Krauss (erecta, ex Meyer.)

119. *Nicolsonia setigera*, *E. Mey.!* comm. p. 124.—Inter arundines ad ripas flum. Umlaas, Port Natal (V. c,) Jan. 1840. Krauss, n. 72.

120. *Vicia sativa Linn.* E. Mey.! comm. p. 126. In incultis circa urbem Capstadt (III. E. b.) Jul. 1838. Krauss, n. 858.

121. *Eriosema cordatum, E. Mey.!* comm. p. 128. In collibus prope Pieter Mauritzburg, Port Natal (V. c.) Aug. 1839. Krauss, n. 471 (ex parte.)

122. *E. reticulatum, E. Mey.* comm. p. 129. *β. canescens, nob.* foliolis subtus incanis, racemis folium æquantibus v. paulo longioribus. *E. ambiguum*, nob. olim MSS. in Hb. Krauss. In solo argillaceo in Zitzikamma (IV. C. b.) Febr. 1839. Krauss, n. 926. From Meyer's plant, which we have not seen, ours seems only to vary in the points we have just indicated. With his *E. Zeyheri!* it agrees entirely in the leaves, differing only in its shorter racemes and fewer flowers; and *E. Dregei,* which we have not seen, seems scarcely more distinct, except in having all the petals yellow, and perhaps in its pubescence. We suspect, therefore, that these species, at least the two former, ought to be united and merely distinguished as varieties.

123. *E. salignum, E. Mey.* comm. p. 129. In graminosis ad rad. mont. Tafelberge, Port Natal (V. c.) Aug. 1839. Krauss, n. 474 (ex parte.)

124. *E. capitatum, E. Mey!* comm. p. 130. Ad sylvarum margines in Outeniqua (IV. C. b.) Jan. 1839. Krauss, n. 831. In the herbarium of our friend D. Mühlenbeck, of Mulhouse, we have seen a specimen of this plant, cultivated in the Royal Botanical Garden of Berlin, under the name of "*Psoralea pedunculata, Ker,*" which synonym De Candolle refers to *Psoralea sericea,* Poir. (Prodr. 2, p. 219, n. 36.) The said specimen perfectly agrees, both with the diagnoses of the latter, and with Meyer's plant; whence we conclude that this species must be eliminated from the genus *Psoralea,* to which at least the specimens we have seen most certainly do not belong. To avoid an unnecessary augmentation of synonyms, we think it more advisable, instead of strictly adhering to the law of priority, to retain the specific name given by Meyer, in preference to Poiret's, the more so as the latter is much less significant.

125. *E. parviflorum, E. Mey.* comm. p. 130.—In collibus prope Pieter Mauritzburg, Port Natal (V. c.) Aug. 1839 Krauss, n. 471 (ex parte.)

126. *E. Kraussianum, nob.*—Caule erecto, antrorsum canopiloso; foliolis oblongis, obtusiusculis, novellis sericeo-argentatis, adultis utrinque parce pilosiusculis; pedunculis axillaribus folio duplo longioribus; floribus subsessilibus, retrorsum imbricatis, helvolo-pilosis; calycis dentibus triangularibus, brevibus.

In graminosis ad rad. mont. Tafelberge, Port Natal (V. c.) Aug. 1839. Krauss, n. 474 (ex parte.)

Intermediate between *E. salignum* (with which it was confounded by Dr. Krauss) and *E. polystachyum*; but differing from both in the pubescence; from the first, moreover, in the folioles being scarcely half as long, though equally broad, and blunt or even rounded at the end, and in the shorter lobes of the calyx; and from the latter, with which it agrees in its yellow flowers, in the leaves being much smaller in every direction, and in the less dilated lobes of the calyx, which, besides, is hirsuto-pilose, instead of tomentose.

127. *E. polystachyum, E. Mey.* comm. p. 130.—Inter arundines prope Umlaas Rivier, Port Natal (V. c.) Jan. 1840. Krauss, n. 64.

Corolla yellow, quite glabrous. Legumes 2, or rarely 3-seeded, broad and obliquely ovate, (6 lines long, 4-5 lines broad) rounded at both ends, with a short beak, densely bearded all over with long soft yellowish (scarcely silky) hairs.

128. *Orthodanum sordidum, E. Mey.* comm. p. 131.—In solo argillaceo prope Pieter Mauritzburg, Port Natal (V. c.) Sept. 1839. Krauss, n. 374. Corolla flava, calyce brevior v. vix eum æquans. Vexillum basi 2-auriculatum, ecallosum. Stamen decimum liberum, basi vix geniculatum. Ovarium margine superiore barbatum.

129. *O. glabratum, nob.*—Fruticulosum, ramis apice puberulis; foliis (omnibus?) 3-foliolatis, foliolis oblongis, mucronulato-acutis, reticulato-nervosis, demum glabris, nitidulis, novellis pilosiusculis; floribus subsolitariis, brevissime pedunculatis.

In collibus prope Kromme Rivier, Uitenhage (IV. C. c.) Mart, 1830. Krauss, n. 844.

Differing from *O. sordidum* in its low, ascending stems, not more than 6-8 inches high, three times smaller leaves, which soon become quite glabrous, and smaller solitary flowers. The leaflets are almost of equal length, the lateral ones somewhat oblique (inæquilateral), prominently reticulated, especially on the upper face.

130. *O. Mühlenbeckii, nob.*—Fruticulosum, foliis (omnibus?) 3-foliolatis, foliolis ovalibus, utrinque subrotundatis, recurvo-mucronulatis, reticulato-venosis, subtus ramulisque pilosiusculis; pedunculis axillaribus geminis brevissimis, leguminibus turgidis puberulis. In summitate montium Outeniqua (IV. C. b.) Mart. 1839. Krauss, n. 830. (*O. dubium*, nob. olim in Hb. Krauss.)

Very near the preceding species, but distinct, we believe, in its still lower growth, smaller leaves, and pubescence. The folioles are broader with respect to their length, barely half as long as those of *O. glabratum*, and much more obtuse; their reticulation is stronger, and their pubescence permanent, at least on the inferior surface.

131. *Copisma paniculatum, E. Mey.!* comm. p. 134.—Locus natal. propr. ignot. Hb. Krauss, propr.

132. *C. viscidulum, E. Mey.* l. c.—Forma inter α et β media, illi caule volubili, huic foliolis parvis et pubescentia accedens. Prope flum. Knysna, distr. George (IV. C. b.) Jan. 1839. Krauss, n. 8 51.

133. *C. effusum, E. Mey.!* comm. p. 135.—In collibus inter flumina Umslutie et Umgani, Port Natal (V. c.) Jun. 1839. Krauss, n. 301.

134. *C. tenue, E. Mey.* comm. p. 136.—Ad sylvarum margines in Zitzikamma (IV. C. c.) Mart. 1839. Krauss, n. 862. We have not seen Meyer's plant, but the diagnose agrees well with our specimens. They come so very near *C. gibbum*, E. Mey., scarcely differing but in pubescence, that we suspect these two species ought to be united.

135. *C. nitidum, E. Mey. l. c.*—Prope Uitenhage (IV. C. c.) Apr. 1839. Krauss, n. 860 (ex parte.)

136. *C. gibbum, E. Mey.* comm. p. 137.—Cum præced. legit Dr. Krauss, n. 860 (ex parte.) Without the fruit, which we have not seen, this species is hardly distinguishable from *C. tenue* and *pictum*, E. Mey.

137. *Fagelia flexuosa, nob.*—Fruticosa, volubilis, tota (exceptâ corollâ) hispido-pilosa et glandulis minutis conspersa, ramis flexuosis; foliolo terminali late ovato, rotundato-obtusissimo basi subtruncato, lateralibus valde gibbis; racemis axillaribus, longe pedunculatis, bracteis ovalibus obtusis diu persistentibus, calycis lobis superioribus corollâ dimidio brevioribus.

In planitie Capensi (III. E. b.) Sept. 1838. Krauss, n. 863. Though very much resembling the common *F. bituminosa*, we must consider our plant a distinct species, especially on account of its twice as large and differently shaped folioles (which are more than 1 inch in length and breadth) and its considerably shorter calyx, which, in *F. bituminosa* is almost as long as the corolla. Our plant, moreover, has a much shorter pubescence; in this and some other points it approaches *F. pubescens*, E. and Z. enum. p. 257, which, however, differs in much smaller leaves, "foliolis lateralibus subsessilibus, stipulis ovato-lanceolatis, racemis 2-3 floris," etc. *F. viscida*, E. et Z. l. c. seems also to differ, especially in the shape of its leaflets. Our plant has its lateral folioles terminated with a short straight visible mucro (or rather acumen), which, in the terminal leaflet, is also present, but scarcely distinguishable from its being recurved and closely adpressed to the inferior surface.

138. *Sigmodostyles, nov. gen.*—Calyx ebracteolatus, profunde subbilabiato-4-partitus, lobis lanceolatis acutis, superiore brevissime bifido. Vexillum complicatum, subrotundum, basi minute bicallosum et utrinque processu brevi deorsum auriculatum, ungue brevi. Alæ basi superne breviter auriculatæ et carinæ paulo longiori adglutinatæ. Carina angulo fere recto rotundato sursum flexa, obtuse subrostrata.

Stamina diadelpha (9 et 1 liberum basi geniculatum.) Stylus sigmoideo-flexus, glaber, a medio inde subito incrassatus et in processum falciformem teretiusculum productus. Ovarium et legumen *Eriosematis*.

Herba? scandens? stipulis membranaceis, foliis pinnato-3-foliolatis exstipellatis, foliolis 3-5 nerviis, racemis spiciformibus axillaribus longe pedunculatis, floribus singulis bracteâ fultis.

Genus e tribu *Phaseolearum*, facie quodammodo *Fageliæ*, sed characteribus indicatis, stylo imprimis, ab omnibus bene distinctum. Pluribus notis propius accedunt *Copisma*, *Scytalis* et *Chrysoscias*, sed facile distinguuntur sive calycis, carinæ stylique forma, sive bracteolarum præsentia, sive aliis præterea characteribus. Nomen (ex σιγμωδης, falciformis) styli insignem formam exprimens, *Walpersiæ* nomini olim in Herb. Krauss adhibito substituimus, quum jam aliud genus nuper ita vocatum sit.

Sigmodostyles villosa, nobis. Tota (præter corollam) molliter villosa; caule herbaceo, volubili? 4-gono; stipulis ovato-oblongis, acutis; foliis brevissime petiolatis, foliolis late ovalibus v. obovatis acutis, terminali longe petiolulato majore, lateralibus brevissime petiolulatis, pedunculis folio longioribus, spica ovata densiflora. Ad latera montis Bosjesmansrand, alt. 2500′, prope Pieter Mauritzburg, Port Natal (V. c.) Aug. 1839. Krauss, n. 246.

Stem herbaceous, somewhat lax and flexuose, most likely twining, with the leaves and peduncles all turned to the same side. Stipules patent, free, sessile, 4-6 lines long, 3 l. broad, more or less acuminate, upper side thinly veined and almost glabrous. Main petiole and partial ones of the lateral folioles 1-2 lines long, terminal leaflet supported by a petiolule of 10-13 lines in length, broadly obovate or nearly orbiculate with a short acumen, 2-3 inches long, lateral ones smaller, especially narrower, more or less oblique at the base, one margin more curved than the other, sometimes gibbous. Peduncles 4-5 inches long, roundish, quite simple and leafless; spike ovate or conic, scarcely one inch long; flowers patent, 5-6 lines

long; calyx about half the length of the corolla, its inferior lobe a little shorter than the rest. Petals yellow, unguiculate; vexillum obsoletely pointed, slightly veined, reddish or purplish outside. Anthers all equal and uniformly oval. Style longer than the villose (2-seeded) ovary, filiform to about the middle, and then swelling into a falcate white and shining process attenuated upwards; stigma terminal, punctiform. Legumen 1 inch long, 4 lines broad, much compressed, pilose, 2-seeded, upper margin straight, lower curved. (Seeds not yet ripe.)

139. *Chrysoscias grandiflora, E. Mey.!* comm. p. 139. Ad sylvarum margines in Outeniqua (IV. c. b.) Jan. 1839. Entwining *Eriosema capitatum*. An imperfect specimen.

140. *Dolichos gibbosus*, Thunb. DC. prodr. 2, p. 400, n. 46, E. Mey. comm. p. 141. Prope Uitenhage (IV. C. c.) Apr. 1839. Krauss, n. 860 (ex parte.)

141. *D. Benthamii, nob.*—Volubilis, glabriusculus; foliis 3-foliolatis petiolulatis late ovato-triangularibus ciliatis, terminali basi subtruncato 3-nervio, lateralibus inæquilateris; racemis axillaribus folio longioribus, pedunculis rigidis apice puberulis; calycis glabri dentibus brevissimis ciliolatis, superioribus 2 alte connatis rotundatis, infimo angusto acuto; stylo apice superne barbato; legumine acinaciformi, substipitato, glabro.

In planitie Capensi (III. E. b.) Sept. 1838. Krauss, n. 861. *D. hastæfolius, E. Mey.* comm. p. 142, the only species with which our plant may be compared, abundantly differs from it in the hispid stem and quite differently shaped folioles. Our plant has the leaves glabrous, except a few thin scattered hairs on both surfaces, especially along the nerves. Pedicels filiform, one or two in the axil of the small bracts, twice as long as the calyx. Flowers white or pale pink, the end of the bifid carina purple. Legumen marked with oblique slender veins.

142. *D. decumbens, Thunb.* DC. l. c. n. 47, E. Mey. comm. p. 143.

β. longipedunculatus, nob.—Caule glabro, foliolis ciliolatis, pedunculo folio duplo longiore apice paucifloro, pedicellis subumbellatis v. brevissime racemosis.

Ad latera montis Tygerberg (III., D. a.), Jul. 1838. Krauss, n. 839. Our plant has the leaflets twice as large as they are indicated by Dr. Meyer, and the peduncles 2-2½ inches long. Flowers yellow, the top of the carina violet or purple.

143. *Scytalis helicopus, E. Mey.* comm. p. 146, *α.*—*Vigna helicopus,* Walpers in Linnæa 13, p. 534.—Inter arundines ad ripas flum. Umgani, Port Natal (V. c.), Jun. 1839. Krauss, n. 233.

144. *Strophostyles Capensis,* E. Mey.! comm. p. 147.—*Phaseolus Capensis,* Thunb. DC. l. c. p. 396, n. 55.

α. ovata, E. Mey.! l. c. In solo argillaceo in Zitzikamma (IV. C. c.), Mart. 1839. Krauss, n. 843.

γ. longifolia, E. Mey. l. c. Cum præced. Krauss, n. 842.

145. *Canavalia emarginata,* E. Mey.! comm. p. 148.—*C. obtusifolia, β. emarginata,* DC. prodr. 2, p. 404, n. 1.—Hb. Krauss, propr., absque loci natalis indicatione.

146. *C. cryptodon, nob.*—Glaberrima, caule suffruticoso, volubili; foliolis oblongis, subacuminatis, obtusius-culis, basi rotundatis, glabris; calycis labio inferiore 3-dentato, dentibus lateralibus minutis sub labio superiore maximo reconditis.

In sylvis primitivis circa Port Natal (V. c.), Jul. 1839. Krauss, n. 296.

Very near, as it seems, to *C. monodon, E. Mey.* comm. p. 149, which differs "foliolis ovato-oblongis," and principally "calycis labio inferiore unidentato." Can Dr. Meyer have overlooked the two very small and hidden lateral teeth? The flowers are one inch long, the calyx something longer than half the corolla, its upper lip very large and broad, longer than the tube. Folioles of the leaves about 2 inches long, 1 inch broad, almost insensibly attenuated into a short rounded acumen, with a minute, often obsolete mucro.

147. *Erythrina Raja, nob.*—Glaberrima fruticosa, petiolo angulato foliorumque nervis aculeatis; foliolis triangularibus,

attenuato-acuminatis, basi subtruncatis, angulis lateralibus rotundatis; racemis longe pedunculatis spicæformibus; calycis campanulati dentibus 5 brevibus, subæqualibus, e basi lata recurvato-apiculatis; vexillo oblongo, alis carinâque calyce vix longioribus; genitalibus exsertis, staminibus monadelphis, legumine moniliformi.

In collibus prope flum. Umlaas, Port Natal (V. c.), Nov. 1839. Herb. Krauss.

It agrees entirely with the figure of "*E. Caffra*," Reichenbach, Flor. Exot. 5, t. 312, which we must distinguish as a peculiar species, or at least as a remarkable variety, differing from *E. Caffra*, Thunb. and E. Mey. (comm. p. 149), in the aculeate petiole and folioles, and in the long raceme, form of the calyx, vexillum, etc. In this point our plant agrees with *E. Humei*, E. Mey. to which is referred *E. Caffra*, Ker in Bot. Reg. t. 736, Bot. Mag. t. 2431, DC. prodr. 2, p. 412 but this, as well as *E. acanthocarpa*, E. Mey., both which we have seen, differ in the form of the calyx, folioles, etc. The name we have chosen, alludes at once to the aculeate leaves and to the form of the folioles which resembles that of some of the well known genus *Raja* among fishes. The aculei are whitish at the broad base, and brown at the recurved end; on the petiole they are numerous, while on the folioles only 4-6 occur on the middle nerve and still fewer on the lower secondary and tertiary nerves or veins, the upper surface has but one or two short aculei, or is sometimes entirely unarmed.

148. *Chirocalyx*, gen. nov.—Calyx 2-bracteolatus, tubo oblongo utrinque angustato, per anthesin antice (subtus) profunde fisso, demum unilabiato, labio (postico) lato margine subtruncato dentes 5 lineari-filiformes exserente. Petala omnia libera, subsessilia, glabra; vexillum ovatum, plicato-concavum, ecallosum, carina alas subæquante vix duplo longius. Stamina basi monadelpha (vagina clausa) superne diadelpha. Stylus basi rectus pilosus, apice uncinatus glaber, stigmate obtuso. Ovarium stipitatum? dense longeque an-

trorsum lanato-villosum. Legum. . . . . Suffrutices? habitu *Erythrinæ*, inermes (semper?)

This genus, sufficiently established on the above character, will, perhaps, include several of those species of *Erythrina* which are distinguished by a "spathaceous" calyx, and which, therefore, notwithstanding their similarity of habit, cannot well, we think, be left in the same genus with those having a bilabiate or almost regularly 5-toothed calyx.

Chirocalyx mollissimus, nob.—Foliis inermibus, utrinque petioloque longo densissime lanato-tomentosis; foliolis lateralibus oblique lateque ovatis obtusissimis; terminali longissime petiolulato, suborbiculari, palmato-5-nervio, petiolulo apice utrinque glandulifero; pedunculo rigido, floribus dense spicatis, calycibus villosissimis.

In summitate montium Tafelberge, Port Natal (V. c.), Aug. 1839. Herb. Krauss, propr.

Having seen but separate leaves and raceme of this most distinguished species, we cannot judge of its habit, but the peduncle being quite as strong and woody as in the frutescent species of the genus, we scarcely doubt of this being also either a shrub or even a tree. The pubescence is exceedingly thick and soft, giving the leaves a velvety appearance, though without lustre. The entire petiole is about one foot in length, and bears the lateral folioles about its middle, the terminal one being, therefore, separated from them by a petiolule of about 5 inches; the former are upwards of 2 inches long, and near the base quite as broad, the terminal one, of the same length, has a breadth of nearly 3 inches; they are all more or less undulated at the margin. At the point of insertion of all the folioles there is on each side a rather large flat or concave blackish gland, half concealed in the surrounding thick pubescence. The peduncle is about 7 inches long, its inferior part at last glabrous. The spike is scarcely 2 inches long. The flower, when fully developed, measures 2 inches from the base of the calyx to the top of the stamens, which then are considerably exserted beyond the corolla. Tube of the calyx 9-11 inches long, the appendages of the upper margin or lip but little shorter, reaching to the top of the vexillum. Before expansion the calyx is quite closed, its mouth being then contracted and the appendages twisted around each other; afterwards the tube splits all along the inferior side nearly to the base, and the appendages are bent backwards, still remaining flexuose. Petals all perfectly glabrous and free, most likely red; vexillum somewhat pointed, attenuated into a short broad unguis; alæ and carinal petals oblong or semi-obovate, rounded at the end. Five of the stamens longer; anthers all linear-oblong and fertile; 9 filaments free for about $\frac{1}{3}$ of their length, the tenth for about $\frac{2}{3}$.

149. *Millettia Caffra, nob.*—Arborea; ramulis, petiolis foliorumque nervis pilosiusculis; foliis pari-pinnatis, 5-6 jugis, petiolo supra canaliculato, stipellis setaceis; foliolis oppositis, petiolulatis, lanceolato-oblongis, nervo excurrente apiculatis, ciliatis, præter nervos glabris, inferioribus minoribus; racemis terminalibus, paniculatis, calyce subbilabiato pedunculisque rufo-pubescentibus, labio superiore emarginato, inferiore 3-lobo, lobis obtusis; vexillo extus sericeo; legumine lanceolato, acuto, 2-spermo, dense fusco-velutino.

In sylvis prope flum. Umlaas, Port Natal (V. c.), Jan. 1840. Krauss, n. 194.

Arbor 25-30 pedalis (fide sched. Krauss), ramulis teretibus, fuscis, lineatis, parce minuteque pilosiusculis, gemmis axillaribus crassis ovatis fuscis lineatis. Folia circ. semipedalia, foliolis patentibus, 2-2½ pollicaribus 8-10 lin. latis, infimis dimidio brevioribus, petiolulis 2 lin. longis, jugis intervallo 8 linearum separatis, summis et infimis magis approximatis, stipellis petiolulum æquantibus v. parum brevioribus, petiolo usque ad infimum jugum 1-1½ poll.-longo. Foliolorum nervi subtus prominuli, medio ultra limbum in mucronem mollem filiformem lineam longum excurrente, lateralibus copiosis rectiusculis æquidistantibus parallelis. Panicula folii circiter longitudine, ramis simplicibus a basi

florigeris, pedicellis solitariis ebracteatis 1-2 lin. longis. Calyx ebracteolatus, late campanulatus, purpurascens, fusco-pilosus, lobis tubum subæquantibus, infimo paulo productiore complicato-concavo, reliquis rotundato-obtusissimis planis. Corolla purpurea, calyce triplo longior; vexillo dorso helvolo-sericeo, demum rejecto, subrotundo, emarginato, carina alisque subæqualibus obtusis vix longiore basi minute 2-calloso, alis basi superne longiuscule calcaratis, petalis carinalibus vix medio-cohærentibus. Stamina diadelpha, 9 et 1, decimo toto libero, filamentis capillaribus subæquilongis glabris, antheris parvis ovalibus. Ovarium villosum, stylus glaber, filiformis, stigmate obtuso. Legumen 1-loculare, sessile, inferne attenuatum, coriaceum, crassiusculum, 3½ poll. longum, 8 lin. latum, totum densissime fusco-velutinum, suturis crassiusculis obtusis, valvis planis. Semina remotiuscula, oblonga (nondum matura.)

From this description it will be seen that our plant has all the characters of the genus *Millettia*, as established by Wight and Arnott in their excellent Prodr. F. l. Penins. Ind. Or. 1, p. 263; to which I have only to add that the leaves, at least in the present species and in *M. rubiginosa*, of which our friend Arnott has kindly sent us a specimen, are by no means "unequally pinnated," (if this term be meant to say as much as abruptly pinnated) as they are called by the authors.—Thus a fine genus, of which two Indian species only were as yet known, is now also represented in the South East of Africa, and thus we have another instance of the evident affinity which the Flora of the tropical and subtropical parts of Africa, on the East as well as on the West coast, bears with that of the East Indies.

150. *Dalbergia myriantha, nob.*—Fruticosa, scandens, inermis; foliis impari-pinnatis, 10-12-jugis; foliolis oblongis, utrinque rotundatis, muticis, supra glabris subtus petiolis pedunculis ramulisque pilosiusculis; paniculis axillaribus et terminalibus, corymboso-ramosis, folio brevioribus, floribus confertissimis (parvulis) 2-bracteolatis; staminibus 9 mona-

delphis (decimo prorsus deficiente), leguminibus tenue membranaceis, stipitatis, obtusis, 2-1-spermis, parce venosis, glabris.

Ad sylvarum margines prope Port Natal (V. c.), Nov. 1839. Krauss, n. 220.

A pretty species, quite distinct from all those described by E. Meyer, remarkable for its short corymbiform panicles with innumerable small white flowers, not larger than those of *Ervum hirsutum*, and especially in the total absence of the tenth stamen, of which we have been unable to discover any trace, even by repeated careful examination of perfect flowers as well as buds. Staminal tube split above. Vexillum obovato-oblong, emarginate, a little longer than the other petals which are quite free, equal in size and form, narrow and obtuse. Calyx semi-5-fid, the lowest segment a little longer and narrower than the others. Stigma subsessile, ovary slightly pilose. Legume 1-1½ inch long, 4 lines broad. Seeds oblong, disposed longitudinally. Leaves 1½-2 inches long, folioles opposite or frequently alternate, not exceeding 3 lines in length and 1 in breadth, flat, minutely reticulated, and bearing on the inferior surface a rare pubescence of scattered adpressed hairs almost invisible to the naked eye.

151. *Cassia (Chamæcrista) Capensis, Thunb.* DC. prodr. 2, p. 504, n. 167, E. Mey.! comm. p. 158.—In solo arenoso in Zitzikamma (IV. C. c.), Mart. 1839. Krauss, n. 910.

152. *Schottia tamarindifolia, Afz.* DC. l. c. p. 508, n. 2, E. Mey.! comm. p. 161.—In solo argillaceo prope Gauritz Rivier, distr. Zwellendam (IV. C. a.), Jan. 1839. Dr. Krauss, n. 930.

153. *Arachis hypogæa, L.* DC. l. c. p. 474, Eckl. et Zeyh. en. p. 260.—"Nomine *Tamangas* colitur in Delagoa Bay," Herb. Krauss, propr.

154. *Mimosa spicata, E. Mey!* comm. p. 164. *Entada? Natalensis*, Benth. in Hook. Journ. of Bot. 4, p. 333.—Ad sylvarum margines prope Port Natal (V. c.), Dec. 1839. Krauss, n. 199.—Frutex scandens, ex Krauss in sched.

155. *Zygia fastigiata, E. Mey!* comm. p. 165.—In sylvis

primitivis circa Port Natal (V. c.), Krauss, n. 300.—Arbor 20-30-pedalis, corona depressa, ex Krauss sched.—Legumen 4-5-pollicare, 10 lin. latum, stipitatum, obtusum, coriaceo-membranaceum, reticulato-nervosum, puberulum, 8-10-spermum, suturis crassiusculis obtusis.

156. *Inga? Caffra, nob.*—Spinis stipularibus brevibus; foliis breviter petiolatis, 18-22-jugis, petiolo inerme, puberulo, inter omnia pinnarum paria glandulam sessilem gerente; foliolis 16-22-jugis, lanceolatis, obtusis, glabris, ciliolatis; capitulis axillaribus, solitariis? pedunculo demum lignescente; legumine subsessili, oblongo-lanceolato, obtusiusculo, oligospermo, valvis coriaceis convexis læviusculis enerviis.

Circa Port Natal (V. c.), Oct. 1839. Herb. Krauss, propr.

Rami stricti, sulcato-striati, glabri, sordide fusci, demum rimosi, ligno albido; internodia pollicaria v. plerumque breviora. Spinæ stipulares geminæ, 2-3 lin. longæ, rectæ, divergentes, semi-erectæ, acutæ, albidæ, apice fuscescentes, basi puberulæ. Folia 1½-2-pollicaria, petiolo 2 lin. longo rachique recta sub-marginato-4-gona supra minute puberulis, seta terminali brevi; glandulæ pinnis cujusque jugi interjectæ, depressæ, reniformes v. orbiculares, centro atrofuscæ, margine tenui pallidæ, infima cæteris majore diametro vix semilineari; jugorum interstitia 1-1½ lin. longa; pinnæ patentes, sæpe angulo fere recto a petiolo communi (rachi) divergentes, 7-10 lin. longæ, inter foliolorum paria glandulas vix conspicuas pallidas gerentes; foliola 1-1½ lin. lata, vix ⅔-½ lin. lata, plana, utrinque enervia glabra pallide viridia, margine minutissime ciliolata. Pedunculus (fructifer) teres, lignosus, glaber, semipollicaris, receptaculo fructifero globoso scrobiculato glabro magnitudine seminis *Viciæ*. Flores. . . . . Legumen intra calycis basin laceram subsessile, glaberrimum, 2½-3-poll. longum, 9 lin. latum, 3 lin. crassum, ntrinque obtusum v. obsolete acuminatum, sordide fuscum, uniloculare, suturis tenuibus nerviformibus rectis v. inter semina hinc inde leviter inflexis interdum rugulosis demum fissis. Semina circiter 8, subglobosa, subcompressa, magnitudine pisi, lævia, medium loculum occupantia, singula pellicula fungosa lacera valvis adhærente circumcincta, funiculis liberis tenuibus 2-3 lin. longis appensa.—Habitus *Acaciæ*, sed legumen et semina potius *Ingæ*. Species e contubernio *Ingæ leptophyllæ*, Lag. (DC. prodr. 2, p. 441) sed descriptarum nulli conveniens.

157. *Acacia horrida, Willd.* DC. prodr. 2, p. 460, n. 130. E. Mey.! comm. p. 166.—Per totum distr. Zwellendam (IV. C. a.), Dec., Jan. Krauss, n. 912.

158. *A. Natalitia, E. Mey.* l. c. p. 167.—Circa montes Tafelberge, Port Natal (V. c.), Jan. 1840. Krauss, n. 66. Arbuscula 6-8-pedalis, ex sched. Krauss.

159. *A. Arabica, E. Mey.* comm. p. 168 (an Willd. ?)—In collibus prope Umslutie Rivier, Port Natal (V. c.), Dec. 1839. Krauss, n. 69.—Arbuscula 10-12-pedalis, ex sched. Krauss.—Our Indian, Arabian, and Egyptian specimens differ from those from Natal in their branches being long and slender, covered with a shorter and early disappearing tomentum, and much weaker spines. We, therefore, suspect that Dr. Meyer's plant, to which ours undoubtedly belongs, is either a peculiar species, or perhaps should be referred to *A. hebeclada*, DC. l. c. n. 136, which, indeed, seems scarcely to differ, except in the lesser number (3-5) of pinnæ.

160. *A. Kraussiana, nob.*—Glabra, ramis costatis petiolisque aculeatis, spinis aculeisve stipularibus nullis; pinnis 3-4-jugis, foliolis 8-10-jugis oblongis mucronulatis, petiolo ima basi glandulam oblongam sessilem gerente partialibusque seta brevi terminatis, capitulis in racemum terminalem dispositis, floribus glabris.

Ad sylvarum margines prope Onder Umlaas Rivier, Port Natal (V. c.), Dec. 1839. Krauss, n. 198.

From *A. pennata, Willd.* this differs in the much less numerous pinnæ and folioles, in the form of the latter, etc. The length of the general petiole scarcely exceeds 1½ inches, that of the partial ones is about 1 inch, and the folioles are 4-5 lines long, and nearly 2 lines broad. The prickles on the branches are slightly recurved, 1 line long, black at the point; on the petiole they are much smaller (on the partial petioles often totally wanting) and disposed on either side between the pinnæ of each jugum, or between the juga themselves, or in both ways at once. Capitules small, flowers white?

161. *Acacia callicoma, nob.*—Inermis? foliis petiolatis, bipinnatis, 8-jugis; foliolis 12-14-jugis, semihastato-oblongis, acutis, basi rotundato-truncatis, margine costaque margini antico approximata ciliatis, rachi eglandulosa, ramulisque apice tomentoso-puberulis, petiolo communi supra medium glandulam sessilem gerente; panicula terminalis, ramis patentibus ebracteatis, pedunculis racemosis subsolitariis, capitulis globosis multifloris.

Vidi specim. absque fructu in Herb. Krauss, loco natali incerto, aut Port Natal, aut Ins. S. Yago Promontorii viridis.

Arbor? ramulis inermibus, læviusculis, cortice fusco, inferne glabro, lenticellis pallidis parce punctato. Stipularum vestigia nulla. Petioli cum rachi 4-pollicares, teretes, glabri, superne tomentoso-pilosiusculi, glandulam oblongam atram (fere $\frac{2}{3}$ lin. longam) 7-8 lineas a basi et 3-4 lin. ab infimo jugo distantem gerentes; pinnæ 1-1$\frac{1}{2}$ poll. longæ, foliolis 3 lin. longis, 1$\frac{1}{2}$ l. latis. Paniculæ rami fere foliorum longitudine, angulo subrecto patentes, pedunculis numerosis 2-4 lin. distantibus solitariis (rarius geminis) bractea nulla fultis, horizontaliter patentibus, demum deflexis, persistentibus. Capitula nondum expansa pisi majoris magnitudine; flores sessiles, hermaphroditi, calyce corollaque infundibuliformibus virescentibus extus puberulis; calyce corolla dimidio breviore, 5-dentato, dentibus brevibus obtusiusculis; corolla 2$\frac{1}{2}$ lin. longa, 5-fida, lobis oblongis acutis. Stamina circiter 20, basi monadelpha, corolla multoties longiora (rubella?), filamentis styloque capillaribus, ovario parvo (sæpe abortiente?) Legumen. . . . . . ?—Species pulchra, facie, foliolorum forma, floribusque valde accedens ad *A. Julibrissin*, quæ tamen differt glabritie, pinnis foliolisque multo longioribus, etc.

162. *Acacia leucocephala, Link.* DC. prodr. 2, p. 467, n. 193.—Prope Porto Praya, ins. S. Yago Promontor. viridis, Apr. 1838, florentem et fructigeram legit Dr. Krauss.

163. *Acacia Caffra, Willd.* DC. l. c. p. 459, n. 111, E. Mey. comm. p. 169.—In arenosis ad ripas flum. Olifants Rivier, distr. George (IV. B. c.), Jan. 1839. Krauss, n. 911.

164. *A. multijuga, nob.*—Ramis petiolisque inermibus, stipulis spinosis rectiusculis brevibus, pinnis 25-30-jugis; foliolis 30-35-jugis, linearibus, obtusis, ciliolatis, glabris; petiolo generali infra infimum jugum et inter 3 v. plura juga extima glandulam sessilem gerente, cum partialibus eglandulosis pilosiusculo; spicis axillaribus solitariis, pedunculo lignescente; leguminibus coriaceis, continuis, glabris, 5-8-spermis, suturis crassiusculis subcarinato-acutis.

In graminosis inter Port Natal et Tugala Rivier (V. c.), Jun. 1839. Krauss, n. 112.

Closely allied to the following, which, however, according to the authentic specimens we have compared, differs essentially in the pinnæ being less numerous (only 9-12 pairs), in the longer and pubescent (not only ciliated) folioles, geminate spikes and longer peduncles. We have not seen the flowers.

165. *A. fallax, E. Mey.* comm. p. 169.—In collibus prope, flum. Umlaas, Port Natal (V. c.), Nov. 1839. Krauss, n. 63 (without fruit.)

166. *Dichrostachys nutans, Benth.* in Hook. Journ. 4, p. 353, *D. Caffra*, nob. dim. in Hb. Krauss.—Ad sylvarum margines prope flum. Umlaas, Port Natal (V. c.), Dec. 1839. Krauss, n. 148.—We formerly considered this distinct from the Senegal plant, on account of the latter having (at least in our individuals from Sieber) spinescent branches, of which the Natal specimens, otherwise quite the same, show no trace; but since Mr. Bentham, who has examined plants from different parts of Africa, refers those of Dr. Krauss to *D. nutans*, we willingly submit to his decision.

(To be continued.)

Biographical Sketch of FERDINAND BAUER, *Natural History Painter to the Expedition of Captain Flinders, R.N., to Terra Australis.*

BY DR. JOHN LHOTSKY.

Having of late searched in vain through a series of works, such as the *Biographie Universelle*, for the slightest notice concerning the above named artist, than whom none ever pourtrayed botanical subjects more admirably, I have considered it incumbent on myself to make use of the original family documents in my possession, and so to plant, as it were, a cypress on the grave of a man with whom I may almost claim kindred, as my countryman and fellow-traveller in Australia.

Ferdinand Bauer was born in 1760, at Feldsperg in Austria, where his father held the appointment of Painter to the court of the reigning Prince of Lichtenstein, but died, when his son Ferdinand was only a year old. However, the elder Bauer must have possessed decided talents as an artist, all his three sons having become eminent in his profession, viz: Francis Bauer, F.R.S., botanical painter to the King at Kew, and Joseph, director of the picture gallery to the above named prince at Vienna. In his earliest youth, Ferdinand copied plants and birds from the designs of his late parent, but soon he took to painting from nature, and followed her as his chief guide throughout life. In the year 1775 we find him connected with the Rev. N. Boccius, Superior of the convent and hospital *Fratrum Misericordiæ* at Feldsperg; who, being very fond of botanical studies, employed F. Bauer to make miniature delineations of plants from nature. He executed the greater part of a collection, which, consisting of 16 volumes in folio, may yet be seen in the Prince's library at Vienna. Occasionally Ferdinand resided in that city, painting landscapes in the studio of the celebrated Artist, Professor Brand.

But the events which preceded and followed the decease of the Emperor Joseph II. of Austria, would probably have doomed the talents of our subject to cramped inactivity, had not favourable circumstances occurred which opened to him a sphere in which he might show all that he could do. It was in 1784 that Dr. John Sibthorp of Oxford arrived in Vienna, with the view of examining the unique manuscripts of Dioscorides in the Imperial Library. Having been introduced by Nicholas Jacquin to Pater Boccius, Dr. Sibthorp first met Bauer at Feldsperg, and the former was so much pleased with the young artist's performances, that he engaged him as a Natural History painter, to accompany him on a voyage which he then was about to undertake in Greece. They accordingly started the same year, proceeding through Italy to Constantinople where they spent the winter, and devoted the time to 1787, to visiting Athens, Corinth, the Greek Islands, and Cyprus; Bauer delineating both plants and landscapes. On their return to England, it was highly gratifying to Bauer to find his brother Francis settled as botanical painter to His Britannic Majesty, King George III., at Kew; and he now devoted the chief part of his time to finishing the drawings made for Dr. Sibthorp's *Flora Græca*; both brothers being also patronized by the late Sir Joseph Banks, Bart., who always remained their steady and kind friend. Dr. Sibthorp having died, Sir James Edward Smith published, in the year 1806, the first volume of the *Flora Græca*, mentioning in his preface the merits of our friend in a most honourable manner.* But Bauer possessed too discerning and unprejudiced a mind, not to perceive that he could never attain any eminence by merely copying plants even with the most mechanical accuracy; and it was, most probably, during his travels with Dr. Sibthorp, that he had devoted himself to the true study of Botany as a science, since several of the plants, for instance *Veronica glauca, Ziziphora capitata,* and *Salvia crassifolia,* are mentioned as discoveries of his; and especially in the Isle of Cyprus he appears to have been eminently diligent and successful. Knowing as I do also, on the other hand, that, even in an advanced period of life, Bauer made numerous sketches after the celebrated flower-pieces of Van Huysum, merely for his own improvement mechanical in the part of the art; it is easy to perceive how he attained such inimitable truth in his performances, for he sought not to idealize nature, but to seize the ideal features of nature. And we think we may venture to point to the *Salvia pomifera*, *Morina Persica*, and *Saccharum Ravennæ*, as patterns of botanical iconography, which, though executed long ago, in an early part of the work, remain unsurpassed to the present day.

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* "Pictorem egregii nominis, Ferdinandum Bauer, cujus virtutem icones nostræ exhibent, secum duxit."

But even before the *Flora Græca* was published, so early as year 1801, we find the merits of our friend fully acknowleged, and himself appointed Natural History Draughtsman to the expedition to Terra Australis, commanded by Captain Flinders, of "H. M. S. Investigator." I am enabled, from letters in my possession, to state what were the liberal terms granted to Bauer. His salary was £300 a year, with rations for himself and servant. The E. I. Company having contributed £1200 towards the expenses of this expedition, the share which Bauer received, enabled him to make his outfit as an artist, very complete. It was farther granted, by the Lords of the Admiralty, that all drawings executed, which were not required for publication in any work connected with the expedition, should be the artist's own property, as well as the specimens collected by him, except those that should go to the British Museum. It is not, for a moment, my intention to follow our enterprising traveller through the different stages of this famous expedition, recorded as its events are by the ablest pens, and well known to all our readers who feel an interest in such subjects; but from Bauer's own letters I glean the following particulars.

During his excursions from False Bay to Table Mountain, and those at King George's Sound, until the first arrival of the "*Investigator*" at Port Jackson, Bauer had completed, up to the 22d. of May, 1802, 350 sketches of plants, and 100 of animals, &c. On quitting the latter place for Torres' Straits, he writes on the 20th of July that his collection then comprized seven hundred drawings, which he had left for safety in the house of the Governor. This astonishingly rapid increase might seem almost incredible in any artist of less ability than our friend; but such were the skill and facility to which he had attained, that he had only (so to speak) to transcribe nature, and his transcripts were ever alike faithful and elegant.

I possess, moreover, two letters of his, one written from the east coast of New Holland, when the "*Lady Nelson*" left the "*Investigator*," and the other, at the period when the latter vessel had been condemned, and Captain Flinders was on his way to England. In the latter communication, which is not dated, but probably written in the middle of the year 1803, Bauer states, that between the period of his starting from and his return to Sydney, he had executed designs of 500 species of plants, and 90 of animals; the latter chiefly birds. He complains, in this and former communications, that the wet state of the cabins in the "*Investigator*," by injuring all his paper, had hindered the perfect execution of his drawings. Captain Flinders having decided to go back to England, Mr. Robert Brown and Mr. Bauer awaited his return in Australia; and during this period, Ferdinand visited Norfolk Island, and spent eight months there, collecting those materials from which Endlicher has been subsequently enabled to compile his *Flora Norfolkica*.*

And here I shall conclude my notice of the part which Ferdinand Bauer bore in the expedition of the "*Investigator*," and proceed to that period when Flinders published the *Narrative* of his voyage. The high opinion which the Commander entertained of the subject of our memoir, appears from many passages of this work. In several instances, where Brown was otherwise engaged, Bauer went to investigate portions of the coast, and in different cases, Captain Flinders speaks of them conjointly, as "Botanists;" a juxtaposition, than which nothing can be more flattering to Bauer. But on the 5th of

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* "Baueri in colligendis stirpibus industriæ, in desiccando dexteritati et divino plane in pingendo ingenio debetur."—*Endlicher. Preface.*

Feb. 1802, an honour was conferred upon him that promises to perpetuate his memory. "To the south-east of Franklin's island, at the distance of eleven miles, there is a low projection of the main land, to which the name of Point Brown was given, in compliment to the naturalist; and four leagues farther, in the same line, a cliffy head received the appellation of Cape Bauer, after the painter of Natural History.*" Such names are frequently changed by subsequent navigators, and it was with the view to obviate this possibility, that Governor Franklin, during his stay at Tasman's peninsula, issued orders that, in all official surveys, the original appellation, as bestowed by the earliest authentic discoverers, should always be preserved.

Although considerable delay took place ere Flinders' voyage was published, still its intrinsic and geographical value was duly appreciated. Bauer bore his full share in contributing to the production of this work, and I incline to think that he assisted Mr. Westall in executing the landscapes, for I know of no book, (the *Vues des Cordillères* even not excepted) where plants and groups of foreign trees, *Seaforthia*, *Xanthorrhæa*, and *Casuarina*, are pourtrayed with such surpassing beauty and truth. In the appendix, the description of ten species of plants are from Mr. Brown; these had been selected out of "the invaluable collection of drawings made by Bauer." It is easy to perceive by a glance at these plates, that they were never executed at home, and from dried specimens. Figures of *Flindersia australis*, *Endesmia tetragona*, and *Franklandia fucifolia*, are acknowleged by botanists to surpass every thing of the same kind.

In the year 1813, Bauer began his *Illustrationes Floræ novæ Hollandiæ;* a work which did not meet with the encouragement it deserved. The cause of failure lay wholly with our author himself; but the error which he committed was of the most honourable kind; for it may be truly said that this publication outstripped, by at least a score of years, the capacities and attainments of the time at which it appeared. There is something very *naïve* in the remark made on the subject in a letter written by Bauer's brother. He says, " Ferdinand could not find people capable either of engraving or colouring the plates properly, and he was consequently obliged to execute every part of the work with his own hands, thus occupying far too much time. Very few, indeed, coloured copies has he been able to prepare and sell." Thus a botanical book which would have been appreciated and supported in the year 1834, or even during the magnificent and art-encouraging reign of Napoleon in France, fell to the ground in 1814. It appears, from documents in my possession, that Ferdinand was excessively and unduly disheartened by this failure ; so much so, that, fearing he should never be able to do any thing else ; he gathered up his papers, and closing, as it were, his accounts and transactions with the literary and scientific world, determined to withdraw to his native land, taking with him his most extensive collections, drawings of more than 2000 species of plants, several hundred sketches of animals, a very valuable herbarium and collection of skins, the whole occupying fourteen large cases, with which he set sail from England in August 1814.

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* *Voyage to Terra Australis*, &c. By Capt. Flinders, 1818, vol. I. p. 110.

The liberality with which Ferdinand Bauer had been treated by the English government, in whose service he had remained, finishing the plates illustrative of the expedition, up to the year 1813, enabled him, on his return to Austria, to purchase a small house at Hitzing, near Vienna, adjacent to the large Botanic Garden of Schœnbrunn. Here he worked very hard in executing and completing his drawings of New Holland plants and animals, as well as some plates of his *Illustrationes*, filling two large volumes with the former. He enjoyed the friendship of the different Naturalists in Vienna; but the greatest compliment ever paid to his merits, proceeded from those enterprising and liberal-minded travellers, Drs. Spix and Martius, when they say in their Voyage, (vol. 1., p 9.) " that what chiefly animated their courage and enthusiasm, was the personal acquaintance of Mr. F. Bauer, who had accompanied Capt. Flinders in his expedition to New Holland, and whom they had seen actually engaged in delineating the extraordinary productions of those distant regions."

In 1819, Bauer again visited England, in order to see his brother, and the other valued friends, with whom a companionship of nearly 30 years had quite assimilated his ideas and feelings. He soon afterwards returned to Vienna, and continued to devote himself closely to painting, most of his productions being destined to go to England, where, besides the works above mentioned, were published his plates for the late Mr. A. B. Lambert's work on *Pinus*, Lindley's *Digitalis*, &c.

Thus continually engaged in the furtherance of his cherished science, and undertaking, even at this advanced period of life, botanical excursions into the Alps of Austria and Styria, and making collections of the plants which he there found, Bauer was seized, in the year 1825, by illness, which terminated his existence on the 17th of March, 1826, in the 66th year of his age. The bulk of his collections was bequeathed to his legal heirs; but the two volumes of miniature paintings of Australian plants and animals, he left to his brother Francis, by whom they have been recently sold to Mr. Robert Brown. His herbarium and skins of animals and birds, with the sketches illustrative of them, were purchased for the Imperial Museum of Vienna, and a great many drawings, as well as copies of the Illustrationes, were still, in the year 1829, in the possession of his brother Francis at Vienna.

Ferdinand Bauer, as his conduct through life proved him and his private letters attest, was a plain straightforward man, full of application and energy. His temper was most kind, and hardly had he obtained his appointment in the "*Investigator*," than he hastened to aid most liberally some of his indigent relations. He ever preserved a deep sense of gratitude towards those friends and patrons, who had done him service, and among them the names of Sir Joseph Banks, Lambert, and Walker, were frequently mentioned in the letters which he wrote while at sea. His own name, recorded as it is by his superior botanical designs, commemorated by the genus *Bauera* in the annals of botany, and, as we before stated, in those also of geography, will long live in the recollection of posterity.

Notes of a Botanical Excursion to the Mountains of South Carolina; with some Remarks on the Botany of the higher Alleghany Mountains; in a letter to Sir W. J. Hooker, by ASA GRAY, M.D.

(*Continued from p.* 217 *of vol.* 1.)

On the 7th of July, we started for the high mountains farther south; having hired a cumbrous and unsightly, but convenient, tilted waggon, with a pair of horses and a driver, (who rode one of the beasts according to the usual custom of this region), for the conveyance of our luggage, and which afforded us, at intervals, the luxury of reposing on straw, at the bottom, while we were dragged along at the rate of two or three miles an hour.

Our first day's journey, extending to about twenty-four miles, was somewhat tedious, for we found no new plants of any interest. We saw, however, a variety of *Lonicera parviflora?* with larger leaves and flowers than ordinary, the latter dull-purplish; probably it is the *Caprifolium bracteosum*, var. *floribus violaceo-purpureis*, of Michaux. The following morning we reached the Watauga River (a tributary of the Holston), and leaving our driver to follow up the banks of the stream to the termination of the road at the foot of the *Grandfather*, we ascended an adjacent mountain, called *Hanging-rock*, and reached our quarters for the night by a different route. The fine and near view of the rugged *Grandfather*, amply rewarded the toil of ascending this beetling cliff, where we also obtained the *Geum* (*Sieversia*) *radiatum*, probably the most showy species of the genus. Its brilliant golden flowers evince a disposition to become double, even in the wild state, and we often found as many as eight or nine petals. This tendency would doubtless be fully developed by cultivation. Around the base of these mountains we saw *Blephilia nepetoides*, and another labiate plant not yet in flower, which we took for *Pycnanthemum montanum* (*Michaux*).

The next day (July 9th) we ascended the *Grandfather*, the highest as well as the most rugged and savage mountain we had yet attempted, although by no means the most elevated in North Carolina, as has generally been supposed.* It is a sharp and craggy ridge, lying within Ashe and Burke counties, very near the north-east corner of Yancey, and cutting across the chain to which it belongs (the *Blue Ridge*), nearly at right angles. It is entirely covered with trees, except where the rocks are absolutely perpendicular; and towards the summit, the *Balsam Fir* of these mountains, *Abies balsamifera*, partly, of Michaux's *Flora* (but not of the younger Michaux's *Sylva*) the *A. Fraseri* (*Pursh*), prevails, accompanied by the *Abies nigra* or *Black Spruce*. The earth, rocks, and prostrate decaying trunks, in the shade of these trees, are carpeted with *mosses* and *lichens;* the whole presenting the most perfect resemblance to the dark and sombre forests of the northern parts of New York and Vermont; except that the trees are here much smaller. This similarity extends to the entire vegetation; and a list of the shrubs and herbaceous plants of this mountain would be found to include a large portion of the common productions of the extreme Northern States and Canada.† Indeed the vegetation is essentially Canadian, intermixed with a considerable number of peculiar species. Under the guidance of Mr. Levi Moody, we followed the *Watauga*, here a mere creek, for four or five miles along the base of the *Grandfather*, until we reached a ridge which promised a comparatively easy ascent. In the rich soil of this ridge, at an elevation of about 400 feet above the Watauga, we found one of those plants which, of all others, we were desirous of obtaining, viz. *Carex Fraseriana.* Mr. Curtis had made diligent but ineffectual search for this most singular and rarest of *Carices*, along the "Catawba near Morganton," and "near Table Mountain," where Fraser is said to have discovered it; and we believe that no subsequent botanist has ever met with it, except Mr. Kin, whose specimen, in Muhlenberg's herbarium, is merely ticketed, "*Deigher walli in der Wilternus.*" Muhlenberg assigns the habitat, "Tyger Valley, Pennsylvania;" but Kin probably obtained his plant in *Tygart's Valley*, Virginia, a secluded spot among the western ranges of the Alleghanies (in Randolph county), not far from Greenbrier Mountains, and other localities visited by this collector, as his labels prove. Kin cultivated the plant for some time at Philadelphia, where it was seen by several botanists, and among them by Pursh, who took it for the *Mapania sylvatica* of Aublet;—a mistake which he did not discover whilst writing his Flora in Europe, although he had the cultivated *Carex Fraseriana* before him. We were too late for good specimens, but succeeded in obtaining a considerable number with the fruit still adherent. The plant grows in tufts, after the manner of *C. plantaginea;* its evergreen leaves are a foot or more long, and often an inch and a half in width, with singularly undulate margins; the slender scapes are naked, except towards the root, where they are sheathed by

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* According to Professor Mitchell's barometrical measurements, the *Grandfather* attains the altitude of 5,556 feet above the sea; the *Roan*, 6,038 feet; and the loftiest peak of the *Black Mountain*, 6,476 feet; the latter thus exceeds Mount Washington in New Hampshire (hitherto accounted the highest mountain in the United States) by more than two hundred feet.—See *American Journal of Science and Arts*, vol. xxxv, p. 377.

† Among those northern species which we had not previously observed

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in this region, we may mention *Carex flexuosa, C. plantaginea, C. scabrata, C. intumescens, Oxalis Acetosella, Streptopus roseus, Viburnum lantanoides,* and *Platanthera orbiculata* in the finest condition and in greater profusion than we ever before met with this, the most striking of North American *Orchideæ.*

the convolute bases of the leaves. To the description of the spike, fruit, &c. we have nothing of any consequence to add.

Long ere reaching the summit, we again met with the new *Saxifraga*,* which we had previously gathered on the mountains near Jefferson, but we now found it in great abundance, both in flower and with mature fruit. It grew in the utmost profusion, on the dripping face of a rocky precipice, near our encampment for the night, on the north-western side of the mountain, five or six hundred feet beneath the highest summit. The vegetation is here so backward, that the *Saxifraga leucanthemifolia*, growing on the brow of this precipice, was not yet in blossom, and the *Saxifraga erosa, Pursh*, in the wet soil at its base, was scarcely out of flower, while at the foot of the mountain it had long since shed its seeds. We were therefore enabled to satisfy ourselves that *S. erosa* belongs to the section *Hydatica*, and that the *S. Wolleana*, (*Torr. & Gray*), from a mountain near Bethlehem in Pennsylvania, is only a variety of this species. Pursh gathered his plant in Virginia, " out of a run near the road from the Sweet Springs to the Union Springs, five miles from the former." But if this species be the *Robertsonia micranthifolia* of Haworth's Succulent Plants, as is most probable, and consequently the *Aulaxis micranthifolia* of this author's subsequent enumeration of Saxifragaceous Plants, it must have been introduced into the English gardens by Fraser, so early as 1810.* We know not how such a common plant could have escaped the notice of Michaux. Under the name of Lettuce, its leaves are eaten by the inhabitants as a salad. At this place we also saw an umbelliferous plant, not yet in flower, which we believe to be *Conioselinum Canadense, Torr. & Gray* (Selinum Canadense, *Michaux*), which is very rare in the extreme Northern States and Canada, to which we had supposed it exclusively confined. We found plenty of *Cimicifuga Americana (Michaux)*, but were obliged to content ourselves with specimens not yet in bloom, and with vestiges of the last year's fruit. It should be collected in September.

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* *Saxifraga Careyana* (*Spec. nov.*) foliis radicalibus longe petiolatis glabris (tenuibus) ovato-rotundis grosse crenato-dentatis basi truncatis vel subcordatis, scapo gracili nudo apice paniculato-cymoso, floribus effusis, pedicellis filiformibus, petalis lanceolato-oblongis sessilibus sepala recurva plus duplo superantibus, carpellis discretis turgidis demum divaricatis calyce liberis.—Variat 1, scapo petiolisque glabriusculis; 2, scapo, pedicellis, necnon pagina foliorum pilis viscosis pubescentibus; 3, scapo foliis aut bracteis foliaceis 1-2 instructo; 4, foliis ovalibus oblongisve, nunc argute dentatis, in petiolum plus minus attenuatis.

Crescit in rupibus humidis opacis altissimorum montium comitatus Ashe, præsertim ad montem *Grandfather* dictum, alt. 3,500—5,000 pedes. Junio floret.—Herba spithamæa, rarius pedalis. Flores parvi. Petala consimilia, sessilia, subtriplinervia, alba, immaculata. Filamenta subulato-filiformia. Carpella ovoidea, stylis brevibus apiculata (stigmatibus subincrassatis), basi vix aut ne vix coalita, ad maturitatem per totam suturam ventralem dehiscentia, ut in pleris Saxifragis plus minus apocarpeis. Semina ovalia, striis elevatis denticulatis (per lentem augentem) longitudinaliter notata.—Species distinctissima, habitu ad sect. *Hydaticam*, sed characteribus *Micranthem* accidens.

We were also too early in the season for *Chelone Lyoni, Pursh*, which we found growing plentifully between the precipice mentioned above and the summit of the mountain, with its flower-buds just beginning to appear. Mr. Curtis remarks that Mr. Nuttall could not have met with this exclusively mountain plant near Wilmington; and also that the *C. Lyoni* of Pursh, and the *C. latifolia* of Muhlenberg and Elliott, are doubtless founded on one and the same species. Both, indeed, are said to have been collected by Lyon, and the leaves vary from ovato-lanceolate, or oval with an acute base, to ovate with a rounded but scarcely cordate base. Pursh's character is drawn up from a cultivated specimen. Here we again met with the *Aconitum*, previously observed in similar situations on the *Negro Mountain*, and which being then only in bud, we took for the *A. uncinatum*, a species collected in this region by Michaux, and recently by Mr. Curtis and other botanists. We were greatly surprised, therefore, to find that our plant, here just coming into blossom, had cream-coloured flowers, very different from those of *A. Lycoctonum*.* On our return to Jefferson, we obtained good specimens at our original locality, where it is very abundant. The weak stems, ascending at first, become prostrate when the plant is in bloom, and frequently attain the length of seven or eight feet. As the stem does not climb, and its flowers are so different from those of *A. uncinatum*, it can hardly be the plant mentioned by Pursh under that species, which he saw at the foot of the Peaks of Otter, and about the Sweet Springs in Virginia. It may be remarked that the ovaries of *A. uncinatum* are often nearly glabrous, and the claws of its petals entirely so; the seeds are strongly plicato-rugose, with a wing-like margin on one side.

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* The only important discrepancy respects Haworth's character, "Corolla irregularis, petalis 2 inferioribus elongatis divaricantibus gracilioribus," and "Flores albi, rubro minute punctati;" while the petals in our plant are very nearly equal and similar, and pure white, except the yellow spot at the base. *Aulaxis nuda* (Haworth, l. c. of unknown origin), appears to be the more ordinary and nearly glabrous form of this species. Mr. Don's description of *S. erosa*, probably drawn from cultivated specimens, also differs from our plant in several minor points.

Near the summit of the mountain, we saw immense quan-

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* *Aconitum reclinatum* (spec. nov. § Lycoctonum), caule elongato decumbente foliisque palmatifidis glabris, lobis divaricatis cuneatis apicem versus incisis, racemis paniculisve divergentibus laxifloris (floribus albidis), bracteolis minimis, galea horizontali conico-cylindracea ore obliquo, labio cucullorum obcordato ab ungue distante, calcare adunco, filamentis edentulis, carpellis glabris 2-4 spermis, seminibus (immaturis) squamoso-rugosis.

Hab. in sylvis opacissimis ad montes *Negro Mountain* et *Grandfather* dictos, alt. 4,000-5,000 pedes. Julio-Augusto floret.—Caulis flaccidus, adscendens vel declinatus, denique procumbens, 3-8 pedalis, ramis gracilibus, seu paniculis laxifloris, divaricatis. Folia flaccida; inferiora longe petiolata, (circumscriptione suborbiculari), profunde 5-7 fida; segmentis interdum 2-3 lobatis, apice inciso-dentatis, dentibus mucronatis; summa subsessilia, 3-5 partita; venis et pagina quandoque superiori tenuissime pubescentibus. Pedicelli sparsi (pedunculique puberuli), flore longiores, bracteolis 2-3 minimis stipati. Flores minores quam in *A. Lycoctono*, albi vix flavi distincti (in siccis leviter purpurascentes); sepalis intus

tities of a low but very large-leaved *Solidago,* not yet in flower, which I take to be the *S. glomerata* of Michaux, who could not have failed to observe such a conspicuous and abundant plant, especially as it must have been in full blossom at the time he ascended this mountain. It does not, however, altogether accord with Michaux's description, nor does that author notice the size of the heads, which in our plant are among the largest of the genus. Specimens in flower were procured by Mr. Curtis, who visited this mountain at a more favourable season. Growing with the latter, we found a *Geum,* which Mr. Curtis had formerly observed on the *Roan Mountain* (where we afterwards met with it in great abundance), and referred, I think correctly, to *G. geniculatum* (*Michaux*), although that species is said to have been collected in Canada. The lower portion of the style is less hairy in our specimens than in Michaux's plant; a difference which, if constant, is perhaps not of specific importance. In the subjoined character, I have supplied an inadvertent omission in the *Flora of North America,* where the sessile head of carpels, which so readily distinguishes this species from *G. rivale,* is not noticed.* Here we again

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pilis aureis barbatis. Galea primum adscendens, mox horizontalis, rostello brevi rectiusculo. Unguis petalorum medium cuculli adfixus; saccus angustus, ore valde obliquo in labium obcordatum expanso. Ovaria tria, 4-6-ovulata.

* *Geum geniculatum* (Michaux), capitulo carpellorum sessili, articulo styli superiore plumoso inferiorem pubescentem excedente, achenio hirsuto, petalis cuneato-obovatis (nunc emarginatis aut leviter obcordatis) exunguiculatis calycem æquantibus ; floribus mox erectis.

β *Macreanum ;* articulo styli inferiore sursum glabrescente.—G. Macreanum, *M. A. Curtis, in litt.*

Crescit in Canada ex *Michaux ;* an recte ? var. β. in umbrosis ad montes *Grandfather* et *Roan,* Carolinæ Septentrionalis, alt. 5,500—6,000 pedes, ubi imprimis detexit cl. *Curtis.* Julio floret.—Caulis 2-3-pedalis, gracilis, foliosus, inferne pilis rigidiusculis retrorsis, superne pilis mollibus patentibus crebrioribus villosus. Folia membranacea ; radicalia nunc palmatim 3-secta, nunc interrupte pinnatisecta, haud rariusque indivisa vel sublobata in eodem stirpe ; caulinia trisecta trilobatave, lobis acutis ; superiora sessilia. Flores minores et numerosiores quam in *G. rivali ;* petala albida, venis purpurascentibus. Styli pars inferior portione plumosa primum

gathered *Vaccinium erythrocarpum,* as already mentioned, and beautiful flowering specimens of *Menziesia globularis,* a straggling shrub, which in this place attains the height of five or six feet.

The only unwooded portion of the ridge which we ascended, an exposed rock a few yards in extent, presents a truly alpine aspect, being clothed with *lichens* and *mosses,* and with a dense mat of the mountain *Leiophyllum,* a stunted and much branched shrub (five to ten inches high), with small coriaceous leaves, greatly resembling *Azalea procumbens.** The far denser growth, and the broader, more petiolate, perhaps uniformly opposite leaves, as well as the very different habitat, would seem to distinguish the mountain species from the *L. buxifolium* of the Pine Barrens of New Jersey, etc.; but, although I think the learned De Candolle has correctly separated the former, under the head of *L. serpyllifolium* (Ledum serpyllifolium, *L' Her. ined.*), it is not easy to find sufficient and entirely constant distinctive characters; since the sparse scabrous puberulence of the capsule may also be observed upon the ovary of the low-country plant, in which the leaves are not unfrequently opposite; and no reliance can be placed on the length of the pedicels. The synonomy requires some correction; the *Ledum buxifolium* of Michaux (in summis montibus excelsis Carolinæ), and of Nuttall (so far as respects the plant which is "extremely abundant on the highest summits of the Catawba Ridge," that is, on *Table Mountain*), as well as the *Leiophyllum buxifolium* of Elliott (from the mountains of Greenville district, South Carolina),

multo, postremum modice brevior, in exemplo *Michaux* manifeste, at juxta apicem parce piloso-pubescens; in var. β. superne glabrata.

Should the Carolina plant hereafter prove distinct, it will of course retain the name proposed by Mr. Curtis, in honour of his friend and former associate in botanical labours, Dr. Mc Ree, of Wilmington, North Carolina.

* We are confident that the latter does not grow on the *Grandfather Mountain,* as is stated by Pursh, on the authority of a specimen collected by Lyon; and we feel little doubt that he mistook for it this species of *Leiophyllum,* vide *Pursh, Flora Amer. Sept.* 1, p. 154, and p. 301.

must be referred to *L. serpyllifolium*, DC. We were too late to obtain the plant in blossom, excepting one or two straggling specimens; but we happily gathered flowering plants of *Rhododendron Catawbiense.*

I should have remarked, that so much time was occupied in the ascent of this mountain, as nearly to prevent us from herborizing around the summit for that day; since we had to descend some distance to the nearest spring of water, and to prepare our encampment for the night. The branches of the *Balsam* afforded excellent materials for the construction of our lodge; the smaller twigs, with large mats of moss stripped from the rocks, furnished our bed, and the dead trees supplied us with fuel for cooking our supper, and for feeding the large fire which we were obliged to keep up during the night. We returned to the top next morning, and devoted several hours to its examination, but the threatening state of the weather hindered us from visiting the adjacent ridges, or the southern and eastern faces of the mountain, and we were constrained to descend, towards evening, to the humble dwelling of our guide, which we hardly reached before the impending storm commenced.

Our next excursion was to the *Roan Mountain*, a portion of that elevated range which forms the boundary between North Carolina and Tennessee, distant about thirty miles south-west from our quarters at the foot of the *Grandfather*, by the directest path; but at least sixty by the nearest carriage road. We travelled, for the most part, on foot, loading the horses with our portfolios, papers, and some necessary luggage, crossed the *Hanging-Rock* Mountain to Elk Creek, and thence over a steep ridge to Cranberry Forge, on the sources of Doe River, where we passed the night. On our way, we cut down a *Service-tree* (as the *Amelanchier Canadensis* is here called), and feasted upon its ripe fruit, which throughout this region is highly and, indeed, justly prized, being sweet, with a very agreeable flavour; while, in the Northern States, so far as our experience goes, this fruit, even if it may be said to be edible, is not worth taking. As *Services* are here greedily sought after, and generally procured by cutting down the trees, the latter are becoming scarce in the vicinity of the "plantations," as the mountain settlements are universally called. Along the streams, we met with the mountain species of *Andromeda* (*Leucothoe*), doubtless Pursh's *A. axillaris;* but whether the original *A. axillaris* of the *Hortus Kewensis* pertains to this, or to the species of the low country, I cannot at this moment ascertain. A portion of Pursh's character seems also to belong to the low country rather than the mountain species, and the two are by no means clearly distinguished in subsequent works. The leaves, in our specimens, are oblong-lanceolate, finely acuminate, their margins closely beset throughout with spinulose-setaceous teeth; and the rather loose spicate racemes (the corolla having fallen away), are nearly half the length of the leaves.

Hitherto we had searched in vain for the *Astilbe decandra;* but we first met with this highly interesting plant in the rich and moist mountain woods between Elk Creek and Cranberry Forge, and subsequently in similar situations, particularly along the steep banks of streams, quite to the base of the *Roan.* Mr. Curtis found it abundantly near the sources of the Linville River, and at the North Cove, where it could not have escaped the notice of *Michaux* , and it is doubtless the *Spiræa Aruncus* var. *hermaphrodita* of that author. It, indeed, greatly resembles *Spiræa Aruncus,* and at a distance of a few yards they are not easily distinguishable; but, on a closer approach, the resemblance is much less striking. Michaux appears to have been the original discoverer of this plant, and from him the specimens, cultivated in the Malmaison Garden, and described by Ventenat, under the name of *Tiarella biternata,* were probably derived. It was afterwards collected by Lyon,* and described by Pursh from a specimen grown in Mr. Lambert's garden at Boyton. We noticed a peculiarity in this plant, which explains the discrepancy between Ventenat and Pursh, (the former having figured it with linear-spatulate petals, while the latter found it apetalous), and which, perhaps, throws some additional light upon the genus. The flowers are *diœcio-polygamous*, the two forms differing from each other in aspect, much as the staminal and pistillate plants of *Spiræa Aruncus.* In one form, the filaments are exserted to twice or thrice the length of the calyx; and the spathulate-linear petals, inconspicuous only on account of their narrowness, are nearly as long as the stamens; the ovaries are well formed and filled with ovules, which, however, so far as I have observed, are never fertilized; and the stigmas are smaller than in the fertile plant and not papillose. In the other or fertile form, both the stamens and the petals are in an abortive or rudimentary state, and being shorter than the sepals, and concealed by them in dried specimens, are readily overlooked; the stigmas are large, truncate, and papillose; and a portion of the ovules become fertile. The Japanese species (*Hoteia Japonica, Morr. & Decaisne*, the *Spiræa Aruncus* of Thunberg), appears to have uniform and perfect flowers;* but the species from Nepal (*Astilbe rivularis, Don*, the *Spiræa barbata* of Wallich, but not of Lindley), is probably polygamo-diœcious, like our own; at least the flowers are apetalous, in a fragment given me by Prof. Royle, and the stamens mostly equal in number to the sepals. I have no doubt that these three species belong to a single and highly natural genus, for which the name of *Astilbe* must be retained; for I see neither justice nor reason in superseding the prior appellation (as suggested by Endlicher,† on account of the incompleteness of the character, which correctly describes one state, at least, of the plant intended), by the subsequent *Hoteia*, the character of which is equally deficient, when applied to the whole genus.* The number of genera which are either divided between North America, Japan, and the mountain-region of central Asia, or have nearly allied species in these countries or in the two former, is very considerable: in other cases, a North American genus is replaced by a nearly allied one in Japan, &c, as *Decumaria* by *Schizophragma*, *Schizandra* by *Sphærostemma*, *Hamamelis* by *Corylopsis*, &c. I have elsewhere alluded to this subject, and shall probably consider it more particularly on some future occasion.

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* Muhlenberg's specimen was also received from Lyon. The only habitat cited in this author's Catalogue, is Tennessee, and we ourselves collected it within the limits, as well as on the borders of that state. The late Dr. Macbride found it in South Carolina, near the sources of the Saluda.

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* "Flores in meo Japonico specimine omnes inveni hermaphroditos, nec ullos polygamos." *Thunberg, Flora Japonica,* p. 212, sub *Spiræa Arunco.*

† Si quod nunc asserunt auctores, *Hoteia et Astilbe, Don;* revera tum plantæ congeneres, posterius incomplete ab auctore suo descriptum supprimendum, et prius egregie stabilitum servandum erit." *Endl. Gen. Suppl.* p. 1416

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* Since the above remarks were written, I have seen, in the *Annales des Sciences Naturelles*, Jan. 1841, M. Decaisne's additional *Note sur les genres Astilbe et Hoteia,* in which the two genera are still held to be distinct, the latter including the North American plant, as originally proposed by this author. The characters of his two genera (excluding such as are common to both) are merely these:

Astilbe. Flores hermaphroditi, vel sæpe stam. abortu fœminei. Petala nulla. Stamina 5.

Hoteia. Flores hermaphroditi. Petala 5, angusta. Stamina 10, quinque petalis opposita breviora.

Since, then, it appears that the *Astilbe rivularis* is more or less diœcio-polygamous, the view I had already taken is certainly confirmed; and when this acute and justly distinguished botanist becomes acquainted with the two states of the American species, and considers that the stamens of the original *Astilbe* are probably sometimes double the number of the sepals, as described by Don, he will doubtless come to the same conclusion. The diagnostic characters of the 3 species may be thus expressed.

ASTILBE. *Ham., ex Don, Torr. et Gray.* (Hoteia, *Morr. et Decaisne*).

1. *A. rivularis* (Hamilton, Don): floribus sæpe diœcio-polygamis, calyce 4-5 partito imo ovario tantum adnato, petalis (an semper?) nullis, staminibus 4-5 nunc 8 (ex *Don*).—Spiræa barbata, *Wall. Cat.; Camb. in Jacquem. bot. p.* 48, *t.* 58. *ex Decaisne.*

Hab in montibus Nepaliæ.

2. *A. decandra* (Don); floribus diœcio-polygamis, calyce 5-partito uno ovario tantum adnato, petalis anguste lineari-spathulatis (in pl. fert. subnullis), staminibus 10 (in pl. fert. abortivis).—Spiræa Aruncus *var.* hermaphrodita, *Michaux.* Tiarella biternata, *Vent. hort. Malmais. t.* 34, Astilbe decandra, *Don; Torr. et Gray. fl. N. Amer.* 1. *p.* 589. Hoteia biternata, *Decaisne, in Ann. Sc. Nat.* (*ser.* 2,) *t.* 11. *f.* 11. *et* 12. *et* 7. *p.* 36.

Hab. in montibus Carolinæ et Tennessee.

3. *A. Japonica,* floribus hermaphroditis, calycis profunde quinque-fidi tubo basi ovarii adnato, petalis oblongo-spathulatis, staminibus 10.—Spiræa Aruncus, *Thunb. fl. Japon. p.* 211, non *Linn.* S. barbata, *Lindl. Bot. Reg. t.* 2011, non *Wall.* Hoteia Japonica, *Morr. et Decaisne, in Ann. Sci. Nat.* (*ser.* 2.) et *t.* 11. *et* 7. *p.* 36.

Hab. in Japonica.

(*To be continued*).

Notes of a BOTANICAL TOUR *in the* WESTERN AZORES. *By* HEWETT C. WATSON, ESQ. (*Continued from page* 9 *of the present volume.*)

IN a former communication, I gave a hasty sketch of my passages to and from the Azores, and first impressions of Azorean botany. Since that letter was written, my collection of specimens has reached England. The species of *Flowering Plants* and *Ferns* amount to three hundred and fifty; and notwithstanding this limited number of species, for Islands in the latitude of Portugal and Greece, I am disposed to believe that the collection will afford a fair approximation towards a Flora, not only of the more westerly isles on which the plants were gathered, but even of the entire group. This opinion is founded in part on the similarity of species seen in the different islands visited by myself; in part, also, on the resemblance between the species gathered by myself and a set of Azorean plants in the possession of Sir W. J. Hooker, who received them from Mr. Guthnic.* The latter collection was formed in the islands of St. Michael, Terceira, Fayal and Pico; mine, in the islands of Flores, Corvo, Fayal and Pico : the two, united, represent the botany of six islands, out of a group of nine islands in the whole; and the number of distinct species in both collections together amounts to about three hundred and seventy. It is highly probable, however, that Sir W. J. Hooker's set of specimens does not include all the species collected by Guthnic and his companion Hochstetter. Terceira, apparently, has supplied most of the twenty kinds of plants in their collection which are not included in mine; while Flores afforded a large proportion of my species which are absent from their parcel sent to Sir W. J. Hooker.

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* This name was erroneously printed Guthrie in the early portion of this article.

It might be expected by a home botanist, or one who lived on shore while herborizing, that with only three hundred and fifty species, I ought to have brought away a very large supply of duplicates. Yet this is not the case; for I do not estimate my specimens altogether at more than four thousand, including the smaller Cryptogamous plants, of which, indeed, I possess very few species. On making this estimate of the specimens, when they arrived in England, I was certainly much disappointed at their paucity. I had collected, from the last week in May up to the first week in September; and had I been living on shore, instead of being on board a ship, it is probable that the specimens dried would have been six times as many. But, as hints for the benefit of other botanists likely to be so impeded, I may here mention the three circumstances which materially lessened the expected results of my exertions. In the first place, the plants dried very slowly, and when their paper was changed there was great difficulty in getting the damp paper made fit for use again. To have scattered the sheets loose about the deck, would have been a great breach of the neatness and etiquette of a man-of-war; and though I did frequently bring them on deck tied in bundles, the process of desiccation was extremely slow in this condition. The only place in which I could keep loose papers was my sleeping cabin; and it will easily be conceived that a space of six feet square, which was occupied already by a bed, chest of drawers, wash-stand, table, chair, and botanical presses, could afford no "drying ground" for loose papers. Secondly, my opportunities for collecting were very uncertain. Sometimes, when all my paper was already damp, I could have got an ample supply of specimens; and at other times, when I had paper dry and ready, a week might elapse without having the opportunity of setting foot on shore. This I had hoped would not have been the case; but it was so; and the circumstance was even more provoking, because, in every other respect, except not finding the expected facilities for botanizing, I had the fullest reason to be satisfied and pleased with the conduct of Captain Vidal and the officers generally. Thirdly, I fell into the error of drawing the straps of my presses too tight, which no doubt rendered the process of desiccation much slower, and considerably injured some of the more succulent specimens. Accustomed to dry plants at home, in an airy room, with usually many quires of paper between each layer of specimens, I had found a heavy pressure advantageous. In a damp climate and ship, where space compelled me to keep a limited supply of paper in use, a heavy pressure was certainly detrimental; though "in the darkness visible" of a sleeping cabin, it was long before I observed the injuries arising from this practice. I can now better understand why specimens come so imperfectly pressed from warm and damp climates, where tight pressure would induce an incipient putrefaction and destroy the distinctness of parts in the succulent individuals. I have, unfortunately, experienced this effect in my semi-succulent species of *Euphorbia*, *Campanula*, and *Convolvulus*, which appear to be undescribed.

To return from a digression which may probably give useful hints to some other collector. My former communication had carried me to the edge of the Caldeira, in Fayal. This was described as a circular hollow in the highest part of the island, and has doubtless been a volcanic crater in long bygone ages: now it is a natural botanic garden, where the true Flora of the Azores, above the cultivated region, reigns undisturbed by plough or spade. The diameter of the basin appears to be about one mile, and its perpendicular depth is more than a quarter of a mile, with very steep sides or walls, down which several small streams rush rapidly, forming beautiful cascades in places where they fall over precipitous ledges of rock. Ultimately, these streams are absorbed in a lake, which occupies about a third of the base of the valley; and from which, as before stated, there is no visible outlet for the waters which are constantly pouring into it.

The summit, or rim, of the Caldeira varies from 1,200 to 1,500 feet above its base; the height of the most elevated point of the rim (which is also the loftiest part of the whole island of Fayal) being 3,170 feet above the sea, and the base of the Caldeira, consequently, about 1,670 feet above the sea. During our stay near Fayal, this Caldeira was scarcely ever clear from clouds or mist for an entire day; and, mostly, it was completely enshrouded during the day, though, not uncommonly, clear for some hours at night, or very early in the morning. Rain falls here frequently, while the lower parts of the island are perfectly dry and sunny; and when no rain is actually descending, the vegetation is often bedewed with moisture from the heavy mists.

The depth of this small valley, and the prevalence of mists over it, must necessarily reduce its share of sunshine to a very slender allowance; while its high and steep walls probably cause an almost constant calm at the base, though the winds of the Atlantic may be sweeping vehemently over their summit. Add to these peculiarities, a plentiful supply of humidity from the streams and spray of waterfalls, coursing down the deep gulleys that are formed in the walls, and it will readily be conceived that the Caldeira is exactly the spot for a natural *Fernetum*. Indeed, so numerous are the *Filices* here, that they give quite a character to the landscape, hanging in profusion about the rocks and waterfalls, and covering the more gradual declivities, among the various *evergreen shrubs* which clothe great part of the sides of the Caldeira, at least in the lower portion of it, for the shrubs gradually become scattered and stunted in the higher parts of the walls, and finally cease near their summit; as was remarked to be the case on the much more gradual ascent from Flamingos to the rim of the crater outside. I made no separate list of the plants seen in the Caldeira, which are almost all of them found also in the various ravines of the mountains around it outside; but the great advantage to a botanist is, that they are here collected into a small space, so that he can, in one day, within the Caldeira, find the species which would occupy his time during research for several days, if looked for outside the basin. I lost much time by not being sooner aware of this circumstance.

The shrubs which are most abundant in the Caldeira are *Erica scoparia*, *Juniperus* (species unascertained), *Myrsine retusa*, *Laurus Canariensis*, and *Vaccinium Maderense* (or *padifolium*). Though the flowers of this *Vaccinium* are much longer than those of the Madeira specimens, I am disposed to regard the Azorean plant as the same species; not detecting any other well marked difference. *Viburnum Tinus*, *Hedera* (*Helix ?*), *Ilex Perado*, and a handsome shrubby *Euphorbia*, also occur among the more abundant species first named. This *Euphorbia* is nearly allied to *E. mellifera*, but is much larger in all its parts, and more especially in its leaves. It grows like a great forked candelabrum, with long and stiff branches, which terminate in tufts of darkly glaucous leaves and umbels of yellow flowers.

Among the *Ferns*, as far as my recollection serves, the most conspicuous for their size or frequency were *Woodwardia radicans*, *Pteris arguta*, and *aquilina*, *Aspidium fœnisecii*, and *angulare*:—*Trichomanes speciosum*, *Hymenophyllum Tunbridgense*, *Cystea fragilis*, *Acrostichum squamosum*, and *Asplenium monanthemum*, though less conspicuous, were plentiful enough in many places, on wet and shady rocks. *Lycopodium suberectum* may also be gathered in the Caldeira; and here only did I see any species of *Equisetum*, the few barren fronds found apparently belonging to *E. fluviatile*.

Ranunculus cortusæfolius, *Cardamine Caldeirăria*, *Sanicula ciliaris*, *Senecio malvæfolius*, *Bellis Azorica*, *Erythræa diffusa*, *Veronica* (No. 158 of my specimens), *Rumex* (No. 216), *Luzula* (No. 254), *Carex sagittifera*, and other species of the same genus, were also observed in this Caldeira, and may be regarded as the Alpine plants of Fayal.

At the base of the Caldeira, about the lake, were several British species which are commonly found in wet or damp places in this kingdom, namely, *Mentha rotundifolia*, *Cerastium viscosum*, *Callitriche verna*, *Peplis Portula*, *Veronica*

Anagallis, Potamogeton natans, Juncus effusus and *Scirpus Savii.* In Fayal, where the low grounds consist of porous rocks, which allow very little water to remain on the surface, the marsh productions thus associate with the alpines; and these alpines are several of them large plants, unlike the diminutive growth of the Scottish Highlands. To these species we may add *Sibthorpia Europæa, Tormentilla officinalis, Fragaria Vesca, Lysimachia nemorum,* (or *L. Azorica*), *Cotyledon Umbilicus,* and *Thymus cæspititius,* as farther souvenirs of the Flora of the Caldeira; and generally that of the hilly parts of the island.

Some other plants also occur on the hills between Flamingos and the Caldeira, which I do not recollect to have seen within it, though it is likely enough that they may be most of them found there, if sought for; namely, *Dicksonia Culcita, Asplenium anceps, Juncus ericetorum, Serapias cordigera, Festuca jubata, Tolpis macrorhiza, Nephrodium molle, Holcus mollis, Rubia splendens, Hypericum grandifolium, Aira caryophyllea,* a handsome (but yet unascertained) species of *Solidago,* a *Habenaria* allied to *H. viridis,* a new *Carex,* to which Dr. Boott has attached the specific name of *Watsoni,* and some few more plants. *Menziesia polifolia* is extremely abundant on the hills, and was also, I think, seen in the Caldeira. *Calluna vulgaris* and *Myrica Faya* are plentiful in places above Flamingos. A *Rubus,* with larger flowers than our native species, also occurs locally.

Among the more interesting productions of the lower parts of the island, and not mentioned in my former letter, may be enumerated the following; namely, *Solanum pseudo-capsicum, Physalis pubescens, Frankenia pulverulenta, Arenaria macrorhiza, Lathyrus Tingitanus, Trifolinm Ligusticum, Dorychnium parviflorum, Asplenium palmatum, Gymnogramma leptophylla, Lythrum Græfferi, Chrysanthemum Myconis, Microderis rigens, Bidens leucantha, Cyperus badius* and *C. esculentus, Gaudinia fragilis, Festuca petræa, Juncus tenuis,* and *Urospermum picroides. Laurus Indica* and an *Olea,* allied to *excelsa,* are doubtful natives.

Several of the names thus mentioned will be unknown to most botanists. They have been obtained from the labels of Guthnic's collection, or are the appellations conferred on the same species in Madeira, by the Rev. Mr. Lowe, and kindly communicated to me, with numerous specimens from Madeira, by Dr. Lemann, from whose extensive knowledge of plants, and more particularly of the productions of the Atlantic islands and the Mediterranean coasts, I have derived great assistance in determining many of those collected in the Azores. While alluding to Mr. Guthnic's collection, I may correct a misprint of his name, which runs through the whole of my former communication; the name having been printed Guthrie, probably in consequence of my spelling it Guthnic, though Guthnick may be the proper orthography.

The genera of Fayal plants, which yield species that I have not yet been able to refer to described species, are *Convolvulus*, *Carex*, *Euphorbia*, *Luzula*, *Veronica*, and *Rubus*. There are also species of *Carex*, *Cardamine*, *Bellis*, *Festuca*, *Sanicula* and *Lysimachia*, which have been named, if not described, by Lowe, Guthnic, or other botanists.

Notes on the Distribution of the PLANTS OF ABERDEENSHIRE *in relation to altitude, by* G. DICKIE, M.D., *Lecturer on Botany in the University and King's College of Aberdeen.*

IN studying the Distribution of Plants, in relation to Altitude, it is important to bear in mind the different agencies by which they may be removed, even to a considerable distance, from their natural places of growth; in short, it is necessary to distinguish between what may be called *natural* and *accidental* stations.

When one meets with patches of *Urtica dioica*, *Cerastium viscosum*, &c. in the Highlands, at a distance from any habitation, it will generally be found that the ruins of some former smuggling hut are not far off. For the most part, however, plants of the low country are not so liable to make their appearance *accidentally* at high altitudes, as are alpine plants to intrude upon the lower haunts of the former. It will be observed, that these remarks are only strictly true, of a district, which includes a range extending from the sea-level to several thousand feet above it. Rivers are the chief agents by which plants of the higher are conveyed to the lower districts.

If now and then, a *solitary* tuft of *Epilobium alpinum, Saxifraga aizoides, Oxyria reniformis, Festuca vivipara,* and *Alchemilla alpina* appears not far from the sea and near its level; this, (on the supposition that they have not been wilfully introduced by man), can only happen in the vicinity of some stream, which traverses, or some of whose tributaries pass through, a mountainous district. Such is the case with the plants alluded to, in the vicinity of Aberdeen; and they present us with examples of what I have ventured to call *accidental* stations.

It is quite likely that, after a time, some species, thus conveyed far from their natural places of growth, may increase rapidly, and become established in such localities; so that it would be ultimately impossible to ascertain whether they had, or had not, been introduced in the way alluded to.

Mr. H. C. Watson, in his second paper, (Lond. Journ. Bot. May, 1842), makes the remark, that "All alpine species have not an equal tendency to descend into dark valleys, or along the courses of streams; or to grow upon shaded rocks, or near the sea-shore. The consequence is, that in such situations several species are occasionally found, far below others, with which they are naturally associated by climate, when they grow in similar situations; and their absolute altitude thus becomes an imperfect guide to their true relative positions as determined by climate." A question arises, therefore, by what means we are to ascertain the lowest natural limits of such stragglers; and it is one which cannot be answered with certainty, except as by attending to the associations of such plants and their comparative abundance, we may make an approximation to the truth. On passing inland, and consequently (in Aberdeenshire at least), ascending, we find that the five plants already mentioned all become more and more abundant; and that, not in the immediate vicinity of any large stream which might be supposed to have conveyed them, they are also associated with others which are more permanent in their stations. The following may be considered as the order in which they naturally appear at their lower limits, *Epilobium alpinum*, *Alchemilla alpina*, *Festuca vivipara*, *Oxyria reniformis*, and *Saxifraga aizoides*, the last descending naturally lower than the others. Many plants of the lower parts of the country, when reaching, as they often do, considerable altitudes, become less fastidious in regard to the situation in which they grow, chiefly in reference to its comparative moisture.

It is by springs, at high altitudes, where we principally meet with such associations as *Montia fontana*, *Saxifraga stellaris*, *Caltha palustris*, *Epilobium alsinifolium*, *Apargia autumnalis*, *Bellis perennis*, *Ranunculus Flammula*, *R. acris*, *Stellaria uliginosa*, *Empetrum nigrum*, *Juncus squarrosus*, *Galium saxatile*, *Blechnum boreale*, *Prunella vulgaris*, *Leontodon Taraxacum*, *Trifolium repens*, *Nardus stricta* and *Veronica officinalis*; the water of the springs retaining a temperature more equable than that of the air, thus favours the development of these plants, many of which are naturally common in the lower districts, but in situations of a very opposite character.

Mr. Watson, whose investigations must be familiar to all who have paid any attention to this interesting subject, has left so little undone, that the present communication and a subsequent one, can only be considered supplementary to that gentleman's published works, and his papers in previous numbers of this Journal.

The following list exhibits the highest observed altitudes in Aberdeenshire, of the plants mentioned, all of which also occur at, or near the sea-level. In a subsequent communication, the lowest stations will be given, of plants naturally occuring chiefly at high altitudes, and in it, care will be taken to distinguish, as far as possible, between their *natural* and *accidental* lower limits. The different altitudes have been measured by Adie's Mountain Sympiesometer. The names of the plants are those adopted in the Fourth Edition of Sir W. J. Hooker's *British Flora.*

	Feet.
Achillæa Millefolium	1715
Aira præcox	1715
Alchemilla arvensis	1715
——— vulgaris	1863
Artemisia vulgaris	1386
Aira cristata	2155
Avena pratensis	2000
Angelica sylvestris	2400
Agrostis vulgaris	2400
Aira flexuosa	3887
Asperula odorata	1200
Bellis perennis	2000
Brachypodium sylvaticum	801
Cardamine pratensis	1500
——— hirsuta	1800
Callitriche verna	2245
Carex flava	1863
Cnicus arvensis	1386
Centaurea Cyanus	1386
Campanula rotundifolia	3048
Carex pulicaris	2163
Campanula latifolia	820
Chrysanthemum segetum	820
Carex stellulata	2000
Cnicus palustris	1800
Cerastium viscosum	2397
Cnicus lanceolatus	1700
Caltha palustris	3559
Cochlearia officinalis	3560
Dactylis glomerata	1386
Eleocharis pauciflora(?)	1863
Epilobium palustre	1500
——— montanum	1800
——— angustifolium	1900
Festuca duriuscula	2500
Fragaria vesca	1900
Geum rivale	1200
Gentiana campestris	1742
Gnaphalium dioicum	2163
Galium verum	1800
——— palustre	1500
——— boreale	2500
Geranium pratense	1747
——— Robertianum	1200
Habenaria viridis	2500
Hieracium murorum	1747
Hieracium paludosum	1200
Juncus squarrosus	2500
——— uliginosus	2500
——— lampocarpus	2400
——— conglomeratus	2100
——— acutiflorus	1175
Luzula sylvatica	2500
Lotus corniculatus	1800
Lycopsis arvensis	1386
Leontodon Taraxacum	2200
Lysimachia nemorum	1863
Lonicera Periclymenum	1500
Lapsana communis	1200
Mercurialis perennis	1300
Melica nutans	1200
Montia fontana	1900
Myosotis palustris	2100
Menyanthes trifoliata	1600
Oxalis Acetosella	2500
Polygonum Persicaria	1386
Poa annua	1386
Pyrethrum inodorum	1386
Pinguicula vulgaris	2500
Petasites vulgaris	1500

	Feet.		Feet.
Prunella vulgaris	1900	Spergula arvensis	1386
Polygala vulgaris	2500	Stellaria media	1386
Poa pratensis	2900	Silene maritima	2163
Plantago lanceolata	1900	Stellaria uliginosa	2800
Pedicularis palustris	1667	Solidago Virgaurea	1200
Polygonum viviparum	2500	Stachys sylvatica	1200
Parnassia palustris	2500	Spergula nodosa	1175
Poa fluitans	2199	Trientalis Europæa	1300
Potamogeton natans	1658	Thymus Serpyllum	1800
—— heterophyllus	1658	Triodia decumbens	1742
Primula veris	1516	Trifolia repens	2000
Quercus Robur	1500	Triticum repens	1200
Rubus saxatilis	1747	Tussilago Farfara	1200
Rumex Acetosella	3559	Tanacetum vulgare	1200
—— Acetosa	1386	Vicia Cracca	1386
Ranunculus Flammula	2000	Veronica Chamædrys	1900
Rosa canina (?)	1863	—— officinalis	1900
—— spinosissima	2000	—— Beccabunga	1200
Ranunculus acris	2800	Valeriana officinalis	1200
Sagina procumbens	1742	Utricularia vulgaris	1500
Spiræa Ulmaria	1386	Urtica dioica	1300

Some Data towards the Botanical Geography of New Holland, by DR. JOHN LHOTSKY, *late of the Civil Service in Van Dieman's Land.*

It is an interesting and, I believe, hitherto unnoticed fact, that it has fallen to the lot of one single individual to become connected in a conspicuous, I might almost say, exclusive manner, with the Botany of New Holland, and that from its very outset. Whatever increase the Flora of this country may in future receive, and accessions doubtlessly will take place to a considerable extent, still, the foundation laid by that eminent naturalist, Dr. Rt. Brown, has been of such a broad and comprehensive kind, that his name must ever remain identified with the Botany of New Holland, far more permanently than those of Humboldt and Bonpland with the Flora of South America. Already the fame of these latter great travellers has, to a degree, merged in that of Martius and St. Hilaire, etc.

The subject, however, on which I purpose to offer some remarks, is of an especial, though no less important character; I allude to the *Botanical Geography of New Holland.* It is now upwards of twenty years since Dr. Brown published his first papers thereon; yet the statements they contain are laid down in such a wide and sweeping, though guarded manner, that subsequent investigation has but confirmed their accuracy. It is only to one feature in Mr. Brown's Memoir that I mean to allude, as forming the basis of the following observations.

In the enumeration which follows of the plants that grow in the southern parts of New Holland, a great approximation may be traced towards the European Flora, entirely coinciding with Dr. Brown's observations, when he says :—" It appears, from the foregoing remarks on the several Natural Orders, that a much greater proportion of the peculiarities of the Australian Flora exist in this parallel, which I have therefore called the principal Parallel (lying between 33° and 35° S. latitude), and that many of them are nearly confined to it." Again :—" Receding from the principal parallel, most of the characteristic tribes diminish in number of species, as well as of individuals," etc.*

It has been to the disadvantage of every branch of science connected with the general history of our globe, that Naturalists, instead of confining themselves to a close examination of the region before them, have all arranged their observations so as to tally, or even made them purposely in accordance, with a certain favourite theory which they desired to establish. Anxious to obviate this anomaly, I have divided the vegetation of the country over which I travelled (namely from Sydney to the top of the Australian Alps) into five

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* *Vide* General Remarks, Geographical and Systematical, on the Botany of Terra Australis, p. 586. Appendix to Capt. Flinders' Voyages to Terra Australis.

Classes or Divisions. I am very far from anticipating that this arrangement of mine will hold good, when New Holland shall be more fully explored, and when repeated observations of this nature shall enable future observers to combine such detached remarks into one comprehensive view, and to correct my partial statements by reference to more extensive investigations. I shall therefore feel neither surprised nor disappointed if some of my Divisions should subsequently merge into those laid down by abler pens.

FIRST CLASS. *The Coast Vegetation from Sydney south to Illawarra.*—Its subsoil is the almost shifting sand of the places contiguous to the sea coast; or rocks of coal-sandstone, either naked or very slightly covered with earth; or it may be seen occurring around those small ponds of salt or brackish water, which are exceedingly common in these districts. In such localities as these, the *Epacris, Boronia, Dillwynia, Gompholobium, Xanthorrhœa, Hakea, Grevillea, Persoonia, Lambertia, Astroloma, Lomatia, Comesperma, Leucopogon* and *Xerotes* are prevalent and characteristic tribes, while no kind of forest-tree, except the *Eucalypti,* is visible. The above-named plants grow in such dense masses, that men and cattle penetrate with difficulty, presenting a striking analogy with the plains of South Africa. The stiff and dry nature of the foliage prevents their being applied to any economic purposes.

SECOND CLASS. *Vegetation of Rocky Gullies near the Sea-coast.*—In these localities, a small number of springs may be seen, which feed the few creeks on the sea-coast. This moisture, whether permanent or periodical, generates a series of plants, not met with elsewhere. In such gullies, and the small flats surrounded by them, appear the only two kinds of *Palms* that are indigenous to Australia. Here the *Corypha australis* rears its annulated stem to a height of a hundred feet, and the *Seaforthia* attains an equal stature, but with a thicker and smoother trunk. The *Arborescent Fern* (*Alsophila*) likewise affects these spots; also that splendid ornament of Australian vegetation, *Doryanthes excelsa,*—the *Tasmania,* *Callicoma*, besides the few Australian species of *Rubiaceæ* and *Malvaceæ*, here occur.

THIRD CLASS. *The Argyle Vegetation.*—It may be seen and is characteristic of all those park-like spots, with their stately *Eucalyptus Trees*, growing at some distance from each other, with very little underwood:—places so peculiar, that they have struck all travellers, from Tasman down to the wanderers of the present day. This vegetation prevails upon every kind of rock, which, by its easy decomposition and the alumine which it contains, is capable of being converted into soil; as *Greywacke, Trap, Limestone, Granite, &c.* The Coal-sandstone is uncongenial to it, because containing so much Silica, that nothing but the scanty growth described as belonging to the First Class can thrive upon it. The *Argyle Vegetation* contains species of *Thlaspi, Cerastium, Goniocarpus, Convolvulus, Euphrasia, Prunella, Thymus, Verbena, Scandix, Hydrocotyle, Desmodium, Lespedeza, Lotus, Oxalis, Silene, Hypericum, Caucalis, Apium, Arabis, Dianella, Brachycome, Myriogyne, Leptomeria, Scleranthus, Polygonum, Exarrhena*; these are amongst the most characteristic of its productions; whilst the family of *Compositæ* also, as *Calotis, Helichrysum, Bellis, Senecio, Sonchus, Angianthus, Gnaphalium, Cotula, Podolepis* and *Craspedia*, also exhibit the discrepancy that prevails between the coast-productions and the inland Flora of Australia. The *Gramineæ*, too, such as *Anthistiria australis, Stipa, Poa australis, Holcus plumosus* and *Triticum*, combine to form part of the turf of these peculiar spots, while this tribe is entirely absent in the districts which produce the first Class of Vegetation. It is further evident, that whilst our first Division is composed, as already stated, of harsh and stiff plants, the latter mainly consists of herbs which are soft and juicy; and whilst so much has been said of the mercantile and commercial importance which attaches to the herbage of this vast continent, we think this is the first time the subject has been treated in a scientific light.

FOURTH CLASS. *The Minero Vegetation.*—This comprehends the Flora of the Downs of that name surrounding the

Upper Murrambridgee and Snowy Rivers, and it is also diffused over the plains and flats at the foot of the Alps. In these Downs chiefly resides the richness of New South Wales, so far as grazing is concerned; they stretch on the east side of the Alps for about a hundred miles, containing many level or slightly depressed plains, which measure from three to seven miles, without break or interruption, till the traveller reaches a slight ridge of dividing hills, skirted again on the other side, by similar tracts. With the exception of *Hakea* and *Brunonia*, no shrub of any size can be descried, and it appears certain that either these plains have been only lately heaved out of the sea, or else that the granitic gravel which overspreads them, must be the result of some very recent geological trituration, for trees appear to have had no time to establish themselves thereon. These Downs present, at different times, different aspects. In the Spring (about November), they begin to be clothed with the most luxuriant herbage, which reaches its perfection at Christmas, when the subsequent heat gradually destroys it, and in summer, the plains, from the month of April onwards, look quite yellow, and are parched and barren. Generally, in winter, these Downs are partially overspread with snow, and if this lasts long and the patches of vegetation on the banks of ponds or creeks become inaccessible to cattle, they are obliged to browse upon the young branches and leaves of *Eucalyptus*, in which case many of them die. As it was at the commencement of such an unfavourable season that I traversed these Downs, my botanical collections were, of course, rather scanty; especially as the hurry of my movements prevented me from paying attention to the family of *Gramineæ* and *Cyperaceæ*, so abundant in these peculiar localities. Besides possessing a good many of the plants of the immediately preceding Class (and a palpable transition takes place between these two Classes), *Lythrum*, *Potentilla*, *Euphorbia*, *Epilobium*, *Rumex*, *Leuzea australis*, *Malva*, *Chenopodium*, *Amaranthus*, *Limosella*, *Helichrysum* (a variety of species of this last genus), *Calotis*, *Gnaphalium*, *Erigeron* and *Senecio* are very characteristic; while, on the ridges that separate the Downs from each other, the genera *Eucalyptus* and *Exocarpus*, with *Callitris sphæroidalis*, may be seen.

FIFTH CLASS. *Alpine Vegetation.*—It begins in the valleys of the Alps, and reaches their summits; amalgamating, on one side, with that of the meadows or *Minero* Downs, and terminating on the other, in a point which our present state of knowledge will not allow us to overstep. I have traced it to the summit of Mount William the Fourth, certainly one of the loftiest among the Australian Alps. Supposing these mountains should somewhere rise to the elevation of perpetual snow, the extent of this latter Class will, of course, be considerably increased. At all events, it is certain, that the numberless peaks and rocky slopes of this chain must yield a great accession to the New Holland Flora, even supposing that there should be no great novelty in the genera and species of the plants which grow there. As the difference of latitude between the Australian Alps and the Table Mountain of Van Dieman's Land is only five degrees, it must be presumed that although the former mountains be several thousand feet higher* than the latter, yet that many of the productions of the Table Mountain will also occur on the Alps; and when it is taken into consideration that Dr. Brown ascended the Table Mountain no less than nine times, the chance of discovering any very remarkable novelties on the yet unexplored heights of New Holland, is much diminished. One species of *Eucalyptus*, growing from twelve to twenty feet high, is the only tree that rewarded my researches among the Alpine vegetation; but some rangers and stock-keepers having assured me that a large tree, of a particular kind, may be seen in one of the valleys, most probably a species of *Atherosperma*, there assuredly remains something yet to be detected and identified in this Class of vegetation.

The soil in this division is primitive, and in those spots where I most closely studied this department of Australian vegetation, I mean in Napoleon's Valley and on Mount William the Fourth, I every where found the formation to be of coarse-grained granite, upon which rests a stratum of vegetable mould, covered with *Sphagnum*. A characteristic feature in these localities consists in the tracts, which for miles, are covered with dead timber (the small *Eucalyptus*), killed during severe winters by the vast accumulation of snow; a fact, however, upon which, inasmuch as it rather belongs to Physical Geography than Botany, I shall not here dilate. The characteristic plants of this Class are two species of *Gentian*, a *Mniarum* and *Sphagnum*, a new *Dracophyllum, Pentachondra, Aseroe, Galium, Veronica* (n. sp.), *Leptorhynchus, Callitriche (?), Eurybia* (several species), *Acrostichum australe, Coprosma, Podolepis* (some of them three feet high), and several *Umbelliferæ* of very extraordinary aspect.

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* According to a calculation, made from the temperature, viz. 196°, at which water boiled on the summit of Mount William the Fourth, this mountain has an elevation of 8,000 feet.

All the most remarkable plants that I collected during my expedition are deposited in the British Museum. It is only by the aid of the second volume of the *Prodromus Floræ Novæ Hollandiæ*, that their earlier elucidation could be accomplished,—a book, than which none would ever afford more effectual assistance to the explorer of New Holland.

Brief descriptions, with figures, of JUNIPERUS BERMUDIANA, *the Pencil-Cedar Tree; and of the* DACRYDIUM ELATUM, *Wall.,—by* W. J. H. (TABS. I, II).

JUNIPERUS BERMUDIANA.

I had long been anxious to procure authentic specimens of *Juniperus Bermudiana*, which is considered to yield the wood of which cedar pencils are made; but notwithstanding that the Bermudas are a colony of Great Britain, and that, besides the interesting use of the wood just mentioned, ships are actually built with it, yet it was only very lately, and then through the kindness of the Rev. C. E. Johns, that I ever had the pleasure of seeing specimens of this important tree. That gentleman has not only obligingly sent some young living plants to the Botanic Garden, direct from the Bermudas, but has supplied my Herbarium with a young plant, and an old branch with berries. But even these, valuable as they are, are scarcely sufficient for me to draw up an accurate description, so extremely variable are the leaves upon the old and the young plant, and even in the older portion upon different branchlets of one and the same branch. It seems to be almost wholly, if not quite, unknown to modern botanical authors; nor do I find that any one has attempted to improve on the old Linnæan character:—" *J. Bermudiana;* foliis inferioribus ternis, superioribus binis decurrentibus subulatis patulis acutis;" a character which by no means accords with my most perfect specimen. Linnæus quotes *Herm. Lugd.* 345 & 347, a work I have not at hand to refer to; but since that is called "*J. Bermudiana,*" it is probable that that is the true plant from the Bermudas; though Linnæus appears to give it a more extended range, by quoting *Brown's Jamaica,* 362, and by saying, "habitat in America." It would appear that there is no authentic specimen in the Linnæan Herbarium; for Sir James E. Smith remarks, that probably several species are confounded under this name. Sprengel's, perhaps the latest published specific character, is almost verbatim that of Linnæus and Willdenow.

All that I shall attempt to do, at this time, is to give as accurate a description as possible of the specimens before me.

Juniperus *Bermudiana;* arborescens, foliis in ramis primariis omnibus lineari-subulatis acutissimis undique erecto-patentibus intus canaliculatis dorso linea media exaratis, in adultis arcte sæpe quadrifariam imbricatis plerisque ovatis acutis, intus concavis extus dorso canaliculatis, baccis terminalibus parvulis (vix maturis) subrugosis. (TAB. I).

Juniperus Bermudiana. "*Herm. Lugd.* 345, *et* 347. *Linn. Sp. Pl. p.* 1471, (*excl. syn. Brown, Jam.*). *Willd. Sp.*

Pl. v. 4, *p.* 851. *Spreng. Syst. Veget. v.* 3, *p.* 909. *Loudon, Arb. Brit. v.* 4, *p.* 2498, *f.* 2358 *(young leaves only).*

HAB. Bermudas.

This is spoken of as a lofty tree, with loose, thin, reddish bark, and fragrant red wood. In our young but entire specimen, scarcely 1 foot high, the branches are numerous, erecto-patent, many simple, others again divided, and these, as well as the main stem above, where the branches begin to spring, at about 3 inches from the base, are every where clothed without any order, with densely placed linear-subulate, very acute, pungent, erecto-patent, shining leaves, grooved on the upper side, semiterete at the back, and there marked for the whole length with a depressed line. In a mature and fructified specimen, about 10 inches long, the main portion is, below, scarcely so thick as a goose-quill, and tapering upwards to less than the thickness of a crow's-quill; this part is clothed with leaves which below are rather remote, ovate, acuminate, appressed, irregularly imbricated in four rows, but gradually as the leaves grow higher up, they are more elongated, and finish by being lanceolate-subulate, and irregularly imbricated; these, as, indeed, all the leaves of the older branches, are concave or channelled within, rounded on the back with a depressed, generally discoloured line, neither reaching to the apex nor to the base. This main branch bears numerous compound branchlets, of which the greater number and the lower ones, are fastigiate and barren, and clothed with small ovate, acute leaves, distinctly imbricated in 4 rows; the fertile branchlets are similar, except that their ultimate barren divisions, as well as the extreme ones of the main branch, are irregularly imbricated and somewhat clavate. The fruit consists of small berries, scarcely larger than grains of pepper in my specimens; the smaller and younger ones are tubercled, the lower tubercles with leaf-like points; but these seem to be obliterated as they advance to maturity, when they are purplish-brown, slightly glaucous in my specimens, but are said to be dark red inclining to purple, when recent.

I regret that I am at present able to give no history of this valuable tree, beyond the meagre accounts which might be gathered from botanical works; but I trust to make up for this deficiency at some future time. It is generally considered that this Juniper of Bermudas *originally* afforded the fragrant "Cedar-wood" of which pencils are made; but that this material becoming scarce and dear, recourse was had to the *J. Virginiana* of the United States, which, *now*, is the wood generally, if not solely, in use for that purpose. There exists indeed a great affinity between the two plants, and the foliage on *some* of the smaller branches of the one can scarcely be distinguished from those on the other. Then, again, the *J. Virginiana*, I have, so far as its botanical characters are concerned, referred (in my Flora Bor. Americ.), to the Europæan *J. Sabina*, in which I am followed by M. Spach. Indeed no genus stands in greater need of a thorough revision than that of the Junipers.

Tab. I. fig. 1. Portion of a young plant; f. 2, its leaves, *magnified*; f. 3, portion of a fruit-bearing plant; f. 4, its leaves, *magnified*.

DACRYDIUM ELATUM. *Wall.*

Foliis undique insertis aliis angustissimis lineari-elongatis tetragonis acutis erecto-patentibus, aliis arcte imbricatis brevibus ovatis obtusis rarius acuminatis, fructu ovato obtuse tetragono apice umbilicato, receptaculo cupuliformi. (TAB. II).

Dacrydium elatum. *Wall. Cat. n.* 6045.

Juniperus elata. *Roxb. Fl. Ind. v.* 3, *p.* 838.

Juniperus Phillipsiana. *Wall. in Herb.* 1824.

HAB. Pulo-Penang. *Wallich, Roxburgh, Jack.*

Here, as in the *Juniperus Bermudiana* just described, the leaves are extremely variable, even in the fruit-bearing plant. My original specimen from Dr. Wallich (*Cat. n.* 6045), is about 14 inches long, much branched, its branches long, flexuose, subcorymbose; the main branch nearly thick at the base as a swan's quill, terete, clothed with remote, ovato-subulate leaves (f. 4); the lower branches, bearing fruit, have the leaves similar to those in our main figure (f. 1, 5, & 6); these gradually pass into the upper and longer numerous branches, which exhibit the long, slender, acutely four-angled foliage, as shown at f. 2 & 3. That state of the plant sent by Dr. Wallich in 1824 as *J. Phillipsiana* (but which in his "Catalogue" he correctly refers to *Dacrydium elatum*) has all the leaves short and densely imbricated, and is itself our fig. 1. In the *Fl. Indica*, Dr. Roxburgh says the leaves are "subcylindric and mucronate," which is not the case with any of them. The same author speaks of the tree as constituting a large timber of slow growth; but nothing more of its history is yet known to us.

Tab. II. Fig. 1. Portion of the tree with all the leaves short and imbricated; f. 2, portion of ditto, with acicular leaves; f. 3, leaves of f. 2, *magnified*; f. 4, leaf from a main branch, *magnified*; f. 5, fruit-bearing branch, *magnified*; f. 6, lower portion of the main branch, *magnified*; f. 7, single leaf, *magnified.*

BOTANICAL INFORMATION.

ILLUSTRATIONES PLANTARUM ORIENTALIUM; *ou Choix de Plantes Nouvelles ou peu connues de l'Asie Occidentale, par* M. LE COMTE JAUBERT, *et* M. ED. SPACH. *Paris,* 1842, *&c.*

Of this beautiful and important publication, the four first *livraisons* have reached our hands; and it is not too much to say that it promises to add greatly to our knowledge of the vegetable productions of the East, in a manner most highly creditable, both to the authors and the accomplished lady to whose pencil the volumes are indebted for the execution of the greater part of the drawings. Such a work is become the more needful and welcome, in consequence of the vast accession of plants to our Herbaria from the regions embraced by it; not only such as are collected by private individuals for the use of themselves and their immediate friends, but those whose collections have been dispersed among numerous subscribers, as in the case of MM. Bové, Aucher Eloy, Fleischer, Kotschy, etc.

It will be issued in *livraisons* of ten beautifully-executed copper plates, and will form five volumes, large quarto, each volume composed of one hundred plates and about thirty sheets of text. Ten *livraisons* are to appear in the year, and the price of each *livraison* is fifteen francs—a very moderate sum, considering the execution and the details of the plates. Besides the botanical figures, the work will be accompanied by a new geographical map in four sheets, exhibiting the principal routes of botanical travellers, commencing with Rauwolf in 1573, and extending to Coste in 1841, which cannot fail to be of great interest, including as they do, besides the names of the travellers just mentioned, those of Tournefort, Hasselquist, Forskal, Sestini, Michaux, Olivier, Corancez, Bélanger, Delaborde, Texier, Texier and Jaubert, Botta, Aucher Eloy, Col. Chesney, Ainsworth, etc. Also General Trézel, Gen. Fabvier, Thuillier, Callier, Hamilton, and de Beaufort. A portion of this important map is already given with the present numbers. It is prepared by M. le Colonel Lapie, on a scale of 3,500,000 of a mile, and extends (from west to east) from the coasts of Asia Minor to Merscheđ, and (from north to south) from the Caucasus to the embouchure of the Persian gulf.

We cannot give a better idea of the botanical interest of this publication, than by saying that the present livraisons contain:—1, Texiera glastifolia, a new genus founded on the old Peltaria glastifolia; 2, Boreava orientalis, a new cruciferous genus; 3, Syrenopsis stylosa, ditto; 4, Silene echinata, *Ott.*; 5, Tunica (Gypsophilæ sect.) brachypetala, *n.*; 6, Dichoglottis (Gyps. sect.) tubulosa, *n.*; 7, Sedum Cariense, *n.*; 8, Jaubertia Aucheri, *Guill.*; 9, Valeriana alliariæfolia, *Vahl*; 10, 11, Acroptilon Picris, *DC.*; 12, Heterochroa minuartioides, *n.*; 13, H. spergulæfolia, *n.*; 14, Abies orientalis, *Poir.*; 15, Campylopus cerastoides, *Spach.*; 16, Hypericum origanifolium, *Willd.*; 17, H. Tournefortii, *Spach;* 18, H. Jaubertii, *Spach*; 19, H. ptarmicæfolium, *Spach*; 20, H. adenotrichum, *Spach*; 21, 22, H. rupestre, *n.*; 23, H. nanum, *Poir.*; 24, H. anagalloides, *n.*; 25, H. cuneatum, *Poir.*; 26, H. repens, *L.*; 27, H. retusum, *Auch.*; 28, H. saturejæfolium, *n.*; 29, H. spectabile, *n.*; 30, H. aviculariæfolium, *n.*; 31, H. Aucherii, *n.*; 32, H. Montbretii, *Spach*; 33, H. amœnum, *n.*; 34, Drosanthe fimbriata, *Spach*; 35, D. hirtella, *Spach*; 36, D. helianthemoides, *Spach*; 37, Thymopsis aspera, *n.*; 38, Androsæmum xylosteifolium, *Spach*; 39, Adenotrias (Hypericum auct.) phrygia, *n.*; 40, Diserneston gummiferum, *n.*, a most extraordinary umbelliferous plant, of which the description will be given in the fifth livraison. The greater number of these figures are from the drawings of Mme. Spach, and they contain admirable analyses of the flowers and fruit.

We shall conclude this notice by an extract from the very interesting Preface, written by Count Jaubert himself.

Having felt, he says, from my earliest youth, a keen delight in the study of plants, I had successively visited several times, first, in company with the unfortunate Jacquemont, whose premature decease has proved a heavy loss to science, and subsequently by myself, the South of France, the Alps, the Pyrenees, Austria and Italy; not to speak of my tribute to the *Flora of Central France,* published in two octavo volumes, by my friend M. Boreau, Director of the Botanic Garden at Angers. Scarcely a year has elapsed, since 1819, without my making some botanical excursion. The Mediterranean Flora engaged my keenest attention, and the researches, then instituted, having urged me to pursue these investigations in the East, I finally, in the spring of 1839, decided on executing this plan, and had the good fortune to join M. Charles Texier, whose noble Archæological labours in Asia Minor are so justly appreciated, and who was then about to set off on his fourth expedition. Never could I have met with an abler guide, a more desirable travelling companion in every possible point of view. Together, we visited that portion of Asia Minor, which comprizes Smyrna and Ephesus, the valley of the Meander, Geyra and Mount Cadmus in ancient Caria, Phrygia, the chain of Olympus in Bithynia, Nicea, Broussa, Nicomedia and Constantinople.

The state of my health, which suffered from the effects of the climate, forbade my pursuing these investigations any farther; but though I have thus only partially performed my self-imposed task, still, devoting my time exclusively to botany, and provided with ample means for gathering an abundant harvest of specimens, I have brought home an immense number of interesting plants, and, among them, a good many new ones. To the publication of the latter I was about to proceed, when I was unexpectedly summoned to the Office of Public Works, a deviation from my favourite pursuits which proved of brief duration, and from which I was no sooner released, than my earliest thought was to resume my projected publication.

It was needful, in the first place, in order to promote the interest of science, to glean out of the rich herbaria of the museum of my honoured colleague, M. Benjamin Delessert, those particular collections which previous travellers had brought from the districts near what I myself had visited. But as my work proceeded, so did the wide horizon expand before and around me, and equally my desire increased to investigate that Mediterranean Flora which first led me to Asia Minor, and which is so intimately connected with the productions of Western Asia, as to throw much light on the general features of the botany of that vast region. Here was indeed an enormous mass of materials, either imperfectly known, or wholly inedited. Collections, which appeared as if exhausted, were perpetually presenting me with subjects alike requiring and meriting elucidation. Who, for instance, could have supposed that the laborious and successful Tournefort had left any thing for Desfontaines and others to glean in the Levant? And yet the manuscripts and herbarium of this eminent naturalist, aided by the original drawings which we owe to the skilful pencil of his artist, M. Aubriet, all of which have been submitted unreservedly to my examination, by the extreme kindness of M. Adrien de Jussieu, permit not a doubt to remain on this subject.

Among more recent collections, none are richer than those of Aucher Eloy, who died at Ispahan in 1838, a real martyr to science, after ten years of travels, which he pursued exclusively in the region of which I have spoken. The principal portion of these, containing eminently the unique specimens, is deposited in the Museum, and has been arranged by M. Adolphe Brongniart; the remainder is diffused among various Parisian and foreign herbaria; in France, MM. Delessert, and Webb (author of the *Natural History of the Canary Islands*), M. Maille and myself, possess the chief part. Some idea may be gained of the discoveries made by this intrepid traveller, by glancing at those volumes of De Candolle's *Prodromus Systematis Universalis Regni Vegetabilis*, which have appeared since 1838. The widow of Aucher Eloy, whom I had the honour to visit at Constantinople, has kindly confided to me her husband's various manuscripts; among which, his Journal of 1835, and that from 1837 to 1838, are peculiarly valuable, on account of the variety of observations which they comprise, on many subjects besides botany; and if they cannot bear comparison as to literary execution with the Indian letters of Jacquemont, they possess an equal interest, owing to the painful trials and difficulties with which his laborious journeys were accompanied. It is my intention, with the permission of Madame Aucher Eloy, to publish these journals separately, after I shall have reduced them to proper order, and added some explanatory botanical notes, deduced from an examination of the plants themselves. It is thus that I have been induced, instead of merely publishing those plants which I have myself gathered, to make known, by drawings and descriptions, (not assuredly, ALL the unpublished or little known botanical productions of Western Asia, which were a work of enormous labour, and expense, but) a considerable selection of these species, enlarging or limiting my plan as may appear best. Thus I propose to unfold a sort of botanico-geographical map, capable of further extension, which shall afford a *rendez-vous* to the researches of such *savans* as already may require, or shall, in future, find occasion, to make use of it. Already I have received information that M. Boissier,* of Geneva, author of *Botanical Excursions in the South of Spain,* has commenced, at about the same period with myself, to work upon Aucher Eloy's plants; but no person, that I am aware, has yet contemplated making any engravings from them, and the public will be only greater gainers from our common labours.

The nature of my collection excludes, at least for the present, any idea of systematic arrangement into families and genera. A lengthened manipulation, alone, of the plants of these regions, could justify the offering to the public a methodical enumeration, or *Flora of Western Asia*, though this is the end towards which my labours would tend, and this the object I would fain promote. If unable myself to attain it, I shall, at least, have contributed to facilitate for others the accomplishment of a work which is assuredly a desideratum in science.

Once embarked in this undertaking, I found that my own powers were hardly adequate to its requirements, and having aimed at procuring the help of an experienced and authorised botanist, I was so fortunate as to obtain that of M. Spach, Assistant-Naturalist at the Museum, already well known by his critical writings, and by his having aided M. Mirbel in the more delicate researches of *Vegetable Physiology*. Together, we undertook this work, to the completion of which I intend, henceforth, to devote all my leisure hours.

The region which we are about to illustrate contains all

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* *See* London Journal of Botany, vol. 1. pp. 311 & 398.

Asia Minor, Armenia and Georgia, as far as the summits of the Caucasian range, part of Persia, reaching to the Salt Deserts and the frontier of Beloochistan, and finally Muscat and Arabia Petræa, to the Isthmus of Suez; excluding the Hedjas and Yémen, which are the subject of a separate publication, already begun by M. Decaisne.

For a very long period of time, that attraction which the East has proved to the inhabitants of Europe, has been felt by botanical travellers, and the following list will convey some idea of the materials they have amassed for us:—premising that the French nation having taken the largest share of these labours, I have felt a peculiar delight in the patriotic work of pursuing such a creditable employment.

A Frenchman heads the honourable series, Peter Belon, a native of Mans, about the year 1546.

Between 1573 and 1575, Rauwolf, of Augsburg, explored Palestine, Syria and Mesopotamia; his narrative was published in 1583, but the systematic catalogue of his plants not till 1755, by Gronovius, at Leyden.

In 1615, Bachelier brought the *Horse-Chestnut Tree* to France from the Levant.

Our immortal Tournefort, one of the greatest reformers of Botany, and an accomplished model for travellers, investigated, by order of Louis XIV, Georgia, Armenia, and the north of Asia Minor, in 1700.

Sherard, the English Consul at Smyrna, in 1702, sojourned there a long time, making many excursions into the adjoining provinces.

In 1728, Buxbaum published the result of his journeys in Armenia and several other countries of the Levant.

In 1738, appeared the work of Shaw, a botanist and antiquary. Guilandin is of the same period.

In 1749, Hasselquist, a pupil of Linnæus, studied the environs of Smyrna, Palestine and Syria.

About 1761, Forskal, the companion of Niebuhr in Arabia, touched at Constantinople and Smyrna.

Sestini, in 1779, described a portion of ancient Bithynia and the Peninsula of Cyziqua; in 1781, 82, and 87, he explored almost all Turkey, and advanced almost as far as Bussorah.

In 1784, Michaux, who was, at a subsequent period, to bring to France the materials for a *North America Flora*, went to Aleppo, under the protection of Lemonnier, and visited several provinces of Turkey and Persia, including Ghilan.

Sibthorp, in 1786, 87, and 1794, botanized twice on Mount Olympus, following the coast of Asia Minor, and exploring the islands, principally that of Cyprus.

About that time, Labillardière made an excursion in Syria.

In 1792, Olivier and Bruguière were sent to Turkey and Persia, on a scientific mission by the Provisional Executive Council, in which Mouge and Roland presided, and they passed six years there.

Latterly, when the love of Natural Science has become more and more diffused, many travellers have explored the East in various directions, and enriched our herbaria with the plants they have collected. Among these are Dumont d'Urville, Bélanger, Botta, Bové, Dubois, Ravergie, Coquebert de Montbret, and especially Aucher Eloy, all natives of France; besides Webb, Rüppel, Schimper, Fleischer, Kotschy and Ehrenberg. The expedition commanded by Col. Chesney, and sent to explore the Tigris, with a view to opening new channels for British commerce, has not been fruitless in the matter of botany.

In the Caucasian countries alone, the Germans and Russians, who accompanied the military expeditions, rendered invaluable services to our favourite branch of Natural History; it may suffice merely to mention the names of Bieberstein, Szovitz, C. A. Meyer, and Hohenacker. A sketch of their labours may be seen in the Essay by M. Trautvetter, entitled *Grundriss einer Geschichte der Botanik in Bezug auf*

Russland, extracted from the Memoirs of the Academy of Science, at St. Petersburg.

While we were engaged in laying, so to speak, the foundation of a Western Asiatic Flora, it was indispensable to append to our *Illustrationes* a Geographical Map of this region, marking the principal routes of travelling botanists, and this I compiled myself, with the most scrupulous care, laying down their tracks from all the documents that I could possibly procure, and giving that of Michaux from the unpublished collection of the Autographs of Botanists, which forms a part of M. B. Delessert's valuable collection. These journeys have afforded me many precious particulars, elucidating not merely the localities named in herbaria, and the stations of individual plants, but supplying many gaps in Geography itself. The great works of M. Texier, on Asia Minor, Armenia and Persia, with the beautiful map of Persia, upon which Colonel Lapie has long been engaged, will throw much light on these countries, and both these gentlemen have kindly consented, in the interval that still precedes the publication of their important labours, to assist in forming a special map, devoted to that region which now engages our attention. All M. Texier's routes are laid down in it, so that it may serve as a travelling map to his atlas. We have agreed also to indicate thereon, both because of their own merit and because of their connexion with M. Texier's travels, the two French, though not botanical, tracks of Corancez and of my respected colleague, M. Léon de la Borde.

Wherever it was practicable, we have marked on our map the authentic indications of elevation above the level of the sea. Many of these statements are derived from the barometrical observations of M. Texier, corroborated by Col. Delcros, whose extensive information on this subject has proved highly useful to us in this department of the work. We feel confident that our map will be extremely serviceable to botanists, whether in facilitating the classification of localities in their collections, or in calling attention to unexplored points, and it may prove of advantage to all travellers, whatever be the object of their researches.

COUNT JAUBERT,
Member of the Chamber of Deputies.

The GEOGRAPHICAL DISTRIBUTION *of* BRITISH PLANTS, *by* HEWETT COTTERELL WATSON. *Third edition.* (For private distribution only.)

THE earlier editions of this work, together with other writings connected with the same subject, have long stamped their author as one well qualified for the task of publishing on the geographical distribution of the plants of our own country; and he has in the present edition carried out his views on a more extensive scale; so extensive, indeed, that several volumes will be required to complete the present object;—namely, "that of bringing together, under a methodical form, those facts which are calculated to assist in showing both the general range and local habitats of such plants as are reputed indigenous, or pretty well naturalized, in the island of Great Britain, and its islets immediately adjacent, from Scilly to Shetland."—"A probability," Mr. Watson continues, "of the work running out to an extent so voluminous, and an unwillingness to give such a pledge for the completion of the whole, as ought always to be implied by the *publication* of any portion of a work, have induced its author to print the parts for private distribution only, and from time to time, as the materials may become ready. The copies are offered to those botanical friends who have assisted the author in his investigations concerning that department of botanical science to which the treatise relates."—This, we know, is not the first liberal act of the kind which Mr. Watson's ardent love of science has led him to practise.

The natural orders, considered in this volume, are the three first, following the arrangement of De Candolle; namely, *Ranunculaceæ*, *Nymphæaceæ*, *Papaveraceæ*.

Each Order is headed by a very valuable history of its geographical distribution over the globe, which shows an intimate acquaintance of the author with this subject on its widest scale: and this, in regard to Ranunculaceæ alone, occupies fourteen pages:—then follow seven Lists; of which the 1st records the proportions of Ranunculaceæ relatively to latitude. List 2. Proportions of Ranunculaceæ varied locally. List 3. Comparative frequency of British Ranunculaceæ. List 4. Number of Ranunculaceæ in the districts of Britain. List 5. Number of Ranunculaceæ in the regions of Britain. List 6. Number of Ranunculaceæ as varied by altitude, in Britain. List 7. Number of British Ranunculaceæ in other countries.

Next comes the full consideration of each species of the several genera. Following the name of the plant is: 1. DISTRICTS. A simple enumeration of certain districts in which the species under consideration has been ascertained to grow. 2. FLORAS. A paragraph enumerating the local Floras and Catalogues in which the same is mentioned. 3. SPECIMENS. Localities from which specimens are preserved in the author's herbarium. 4. UNCERTAIN LOCALITIES. 5. BRITAIN: under which head the distribution of the species in Britain is slightly sketched out. 6. GENERAL DISTRIBUTION.—The concluding paragraphs, preceded by the names of the districts, embrace a miscellaneous compilation of localities brought together from various sources of information.

With each species are given two diagrams: the one representing a miniature map of Britain divided into eighteen sections or districts, by one longitudinal and several transverse lines; so drawn as to throw the counties into that number of groups; while the second figure shows the absolute and comparative heights attained by the highest hills of the respective districts; the cones of this figure corresponding with the districts on the map, as numbered from south to north. "By introducing a copy of this diagram under each species whose distribution is to be illustrated, and omitting the figures in those spaces which correspond to districts within which the species had not been ascertained to grow, a tolerably exact notion of its topographical range may be instantly conveyed to the eye of a reader. Those botanists who are sufficiently interested in such investigations, may give greater precision to the diagram by colouring the spaces, in accordance with the details of distribution given in the text for each species. This course will be more especially requisite with the scale of altitudes; since the mere elevation of the highest hill of the district cannot prove at what particular height the species in question has been ascertained to grow, although it may often show that a given species is to be found in districts including lofty hills. In each copy of the work, one or more of the diagrams will be so coloured, by way of example; but the manual labour of applying colour to all of these, would be far too great; while the cost of engraving equally prevented the substitution of printed shades or markings in the diagram, the introduction of which would have necessitated the cutting of a separate block for each of 1200 species."

Indeed, nothing here is wanting that labour and industry, extensive travels and acute observation can furnish; and if carried out to its completion, Mr. Watson's book will serve as a model (as indeed it does now, so far as it goes) for all other works on this interesting subject.

SALICTUM BRITANNICUM EXSICCATUM; *containing dried specimens of the* BRITISH WILLOWS, *edited by the* REV. J. E. LEEFE, M.A. *Fasc.* 1, *folio, Saffron Walden,* 1842.

IN the first volume of this Journal, (p. 418), we announced that Mr. Leefe had in preparation a series of specimens of British Willows, of which the present is the first fasciculus. The author, in his introductory remarks, modestly alludes to the above notice, as "indicating more extended objects than the editor wishes now to be understood has been aimed at." But, on referring to that notice, we are satisfied that the most sanguine expectations we thus expressed, are here fully realized: or if any expression requires to be modified, it is that "the author only wishes to retain as species such as afford readily ascertainable characters, rejecting those which exhibit intermediate forms," &c. Mr. Leefe's views are no doubt more correctly stated in the present work. "The labels are intended only to supply a correct set of names for the specimens—this, alone, being no easy matter, when it is considered that the descriptions, to which the plants must be referred, are very often rather representations of forms than species, together with occasional synonyms and remarks. Any attempt, however, to define the limits of specific variation has been abandoned; because the editor feels strongly, that until the value of the characters on which specific distinctions are founded, has been ascertained by experiment, the limits so assigned could only be looked upon as guesses at truth. At the same time, with a view to promote inquiry, he has prefixed to the collection, a table, in which such Willows as he thinks are not species are arranged as varieties;—but in doing so, he wishes to be clearly understood, that he does not profess to decide dogmatically, but merely to express a suspicion, that in order to facilitate the study of the *Salices*, it is desirable to combine, instead of any longer separating the various forms; not indeed passing them by without notice, but reducing them to what appear their proper ranks. It is true, that in a paper printed in the *Transactions of the Botanical Society of Edinburgh*, the editor expressed rather a strong opinion respecting the distinctness of certain species so called, and this will probably be the conclusion arrived at by most persons to whom those of any one locality are accessible; but an inspection of a large series of specimens from several localities, has convinced the editor that his views were in some degree too contracted."

Mr. Leefe now enters upon his useful task with a mind perfectly free from prejudice, and has given a most beautiful and useful series of specimens in the present fasciculus, carefully selected and well dried, neatly fastened on white paper, and attached to the stout leaves* of the fasciculus, which are of a dark grey colour, and, beneath, is the label, with the synomyms, time of flowering, &c., and, generally, some useful remarks. Forty-nine folios are thus occupied, and the synoptical table contains the following species and varieties.

A. PEDUNCULATÆ.

*Amenta terminalia serotina.	S. reticulata, *L.*
	S. herbacea, *L.*
** Amenta lateralia coetania .	S. pentandra, *L.*
	S. amygdalina, *Sm.*
	S. triandra, *L.*
	S. contorta, Crowe.
	S. Hoffmanniana, Sm.
	S. triandra, Curtis.
	S. undulata, *Ehrh.*

B. SESSILES.

*Antheræ defloratæ nigræ . .	S. Helix, *L.*
	S. purpurea, *L.*
	S. purpurea, Sm.
	S. Woollgariana, Borr.
	S. ramulosa, Borr.
	S. Lambertiana, Sm.
	S. rubra, *Huds.*
	S. rubra, Sm.
	S. Forbyana, Sm.
**Antheræ defloratæ luteæ. .	S. viminalis, *L.*
	S. viminalis, var. *intricata.*
	S. viminalis, var. *stipularis.*
	S. stipularis, *Sm.*

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* The price of the fasciculus thus beautifully prepared is only £1 :—with the specimens loose, 10*s*.

S. Smithiana, *Willd.*
S. Smithiana, E. Bot.
S. holosericea, Hook.
S. ferruginea, And.
S. acuminata, *E. Bot.*
S. cinerea, *L.*
S. cinerea, Sm.
S. aquatica, Sm.
S. oleifolia, Sm.
S. aurita, L.

Such specimens, collected chiefly by Mr. Leefe and Mr. Ward, of Richmond, Yorkshire, who has long made the willows his peculiar study, and authentically named with the valued and valuable assistance of M. Borrer, cannot fail to be of the utmost use to every student and lover of British plants, and highly to the honour of the author. As may be supposed, it is only a limited number of copies of such a work that can be prepared, and it will reflect little credit on the botanists of this country, if they allow these to lie long in the hands of the publishers; Mr. Bowman, of Richmond, Yorkshire, and Messrs. Whittaker and Co., London.

Specimens of Scottish Plants.

Since the days of Dickson, and Don, and Drummond, we know of no one who has ransacked the plains and the hills, and the glens and the mountains of Scotland more successfully than Mr. Wm. Gardiner, of Dundee: and it is not a little remarkable that Don and Drummond also were inhabitants of the same district, the immediate vicinity of Dundee. From specimens that Mr. Gardiner has communicated to us, and especially from some cryptogamous ones that we have lately received from him, we know that he is not only very successful in his researches, but possesses the art of preserving his specimens with great skill and neatness, whether of phænogamic or cryptogamic plants, and we have reason to believe, that during the two last seasons, he has distributed more than 30,000 specimens; so that he cannot fail to have much assisted in promoting the good cause of Botany.

During the ensuing summer, he intends to add to his stores, by collecting in the mountains of Clova, Braemar and Cairngorum, those old and favourite haunts of his predecessors, and he is now desirous of receiving the names of subscribers to extensive sets of specimens, which will be gathered during the present year, of Scottish Phænogamic and Cryptogamic Plants, including as many of the rarer ones as possible; carefully selected and prepared, with the names and localities attached. Each set will contain 500 specimens, and be offered at the moderate rate of £2. Mr. Gardiner will be glad to receive the names of any persons who may wish to subscribe. His address is 40, Overgate, Dundee, N.B.

Swiss Lichens.

We have elsewhere,* and with much praise, noticed the publication of the valuable "*Lichenes Helvetici Exsiccati*" of our friend, Mr. Schœrer; we have just received the continuation, as far as Fasc. XVIII, inclusive, which extends to 450 species. This work, we presume, is now completed, for it is accompanied by the second part of the "Lichenum Helveticorum Spicilegium; continens Sectiones VII—XII, illustrantes Lichenum exsiccatorum fasciculos XIII—XVIII;" and this Spicilegium is brought to a close with a very copious Index. This is a work which deserves to be in the hands of every student of the Lichens, and we believe that Mr. Ackerman is the agent for the sale of it in this country.

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* In the English Flora, Vol. V. Part I. p. 140, and in the first volume of the Journal of Botany, p. 182.

Discovery of Carex paradoxa, WILLD., *in Britain.*

We have the satisfaction of announcing this interesting *Carex* as an inhabitant of the British islands; fine specimens having been sent to us from Ireland, where the discovery was made by Mr. D. Moore, Curator of the Glasnevin Botanic Garden, who has already added other new and very interesting plants to the Flora of his native country. Along with the specimens, Mr. Moore has been so obliging as to communicate his very accurate observations, made from recent specimens, on this and its allied species *C. paniculata*, Linn., as well as from *C. teretiuscula*, Good. and which we here transcribe;

CAREX PANICULATA, *Linn.*

Roots densely tufted; stem striated, acutely angular; leaves broad, strongly striated; spike generally 3 to 4 inches long with diverging branches; fruit plano-convex, between deltoid and triangular, with a broad serrated margin extending from the middle to the bidentate beak, broad and subcordate at the base, stipitate, striated on both surfaces; striæ scarcely extending down the slender stipitate point of attachment; scales ovate, acuminate, with broad membranaceous edges.

CAREX PARADOXA, *Willd.*

Roots densely tufted; stem striated, long and slender, slightly triangular, except where it approaches the panicle, and there only roughish; leaves long and narrow, slightly striated; spike 1-2 inches long; branches short, acuminate; bracteas very small, setaceous; fruit ovate subrotund, gibbous on the inner face, with a long slender beak, slightly cloven, and edged with a narrow serrulated margin, base gradually lengthened out into a strong stipitate point of attachment, which is a continuation of the convex surface, with strong nerves all round, which extend down the stipe; scales ovate, acuminate, scarcely membranaceous at the edges.

Carex canescens, *Host, Gram. v.* 1, *p.* 43, *t.* 57, (figure of the fruit too short and broad at the base). *Schk. Caric. t.* E, N. 21, (figure excellent).

The characters which will best separate this from *C. teretiuscula*, Good., which it most resembles, are its *closely tufted* habit, differently shaped fruit, and especially the strong nerves *continuing all round it*, which, indeed, will alone suffice.

From *C. paniculata* it may be recognised by the whole plant being much more slender, the leaves narrower, spike closer and shorter, the stems *nearly round* for two-thirds their whole length and almost smooth, but especially by the differently-shaped fruit, and scales less membranaceous at the edges.

HAB. Found by me in considerable abundance, growing on the margins of deep drains, cut through a boggy wood in Ladiston demesne, the seat of J. C. Lyons, Esq. near Mullingar, County Westmeath, July, 1842.

I may here mention that *Carex teretiuscula*, Good. may easily be distinguished from its British allies, by the roots creeping extensively, and consequently, not growing in close dense tufts; but the striæ on the fruit afford at once a ready and permanent character, as pointed out by Dr. Boott; these are only to be found on the *convex surface*, varying from *three* to *five*; whereas in the others, the fruit is striated on both surfaces with numerous striæ.

D. MOORE.

Dublin, 20th Dec, 1842.

BOTANICAL COLLECTORS.

Chinese Plants.

It has been already announced in a late number of the Gardeners' Chronicle, that Mr. Fortune, who has had the important charge of the hot-house department in the Horticultural Society's garden, is to proceed, under the auspices of that Society, to China, for the purpose of introducing new plants and fruits to this country. His leisure time, however, will be devoted to collecting and drying the vegetable productions of that new and hitherto unexplored region, and we are happy to learn that these collections, well selected and well preserved, will be offered to botanists on similar terms to those of South America gathered by Hartweg. Thus, by this important mission, botany and horticulture will be alike promoted.

South African Botany.

In the 2nd vol. of our *Journal of Botany*, it will be seen that in November, 1839, M. Zeyher, the African traveller and botanist, was about to proceed on an expedition to the north, in the interior of South Africa, for the purpose of collecting animals and plants. This extensive journey was planned and executed wholly at the expense of the Right Hon. the Earl of Derby. One of his Lordship's own gardeners, Mr. Burke, than whom few were better fitted for the enterprise, was sent out to take charge of this expedition. He reached the Cape on the 16th of March, 1840, and after spending a few days in visiting Ludwigsberg, and getting his luggage on shore, he proceeded to Vyge-Kraal, where a waggon was already provided; but six weeks were required to procure the oxen and make the necessary preparations, when he proceeded in an easterly direction to Uitenhage, where he was joined by Zeyher, with two waggons. Thence they started for the interior, collecting every where as they went along; and at length, amidst unheard of difficulties, they proceeded in a northerly direction, crossing the Orange river, till they attained nearly to the 24th degree of latitude, and then returned to the Cape, bringing with them an immense collection of living and dead animals, and dried plants, seeds, bulbs, etc. With these, Mr. Burke immediately embarked for Europe, in July, 1842. Their journey would have stretched much farther north, were it not for the jealousy of a body of Dutch emigrants who had just settled in that country where they wished to pass, and who, suspecting our travellers to be spies, most obstinately prevented their proceeding further. We can speak to the great value of the botanical collection, which Lord Derby has generously placed at our disposal. It is remarkably well preserved, and contains a great deal of novelty and some highly remarkable forms. Amongst them is a new *Menodora*, a genus hitherto supposed to be peculiar to South America, and a very singular plant, allied to *Anacampseros*, but with the stipules quite entire, and so large and concave, white and membranous, and so closely imbricated, that the plant looks more like some gigantic-leaved *Sphagnum*, than any phænogamous production. The singular *Stapelia Gordoni* was found in plenty. This was previously only known to European botanists by the extraordinary figure in "*Masson's Stapeliæ*;" so extraordinary, indeed, that our stapelia-growers used to speak of it as a fiction; but the representation is most faithful and accurate. One of the *Fungi* is so peculiar, that the Rev. Mr. Berkeley has pronounced it to be a new genus, and a figure and description of it will appear in an early number of this Journal.*

It is our intention here, however, to enter no farther into the particulars of this valuable collection, than is necessary for showing that by this important and expensive expedition, Lord Derby has rendered an essential service to botany as well as to zoology; and we trust to have the opportunity, ere long, of making known many of the novelties, through the medium of this Journal.

Our object, in the present instance, is to state that Mr. Burke having left M. Zeyher at Cape-Town, it is the intention of the latter, for several years, to devote his attention, as zealously as ever, to collecting the seeds, roots and specimens of South African plants. He has already commenced gathering the more showy liliaceous species, and growing them at the Cape, where they will be well looked after during his absence on his excursions. His motive in thus cultivating them before they are transmitted to Europe, is that they may be well ripened after flowering; for it is well-known, that Cape bulbs have suffered much from being sent off immediately after being gathered in their flowering state. He has already set out on a journey to the west, into Namaaqualand, where the vegetation is extremely different from that of the eastern extremity of the colony, where he has lately passed so many years. M. Zeyher's address is at Vygekraal, Cape Town, Cape of Good Hope.

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* See our Tabs. VI & VII.

Plants of Caucasus and the Volhynia.

It is announced by MM. Hochstetter and Steudel, that M. R. F. Hohenacker, of Esslingen, near Stuttgard, on his return from the countries of the Caucasus, when it had been his object to pursue his investigations again in Syria and Palestine, was induced to abandon this design, from a consideration of the present state of those regions, and in consequence of the advice of well-informed persons, especially the learned heads of the *Unio Itineraria,* to adopt the following plan. He is about to settle a while at Esslingen, and aided by the information and botanical knowledge possessed by Professor Hochstetter and Dr. Steudel, to arrange and prepare for sale the plants that may be collected by travelling botanists. The purchase of the highly interesting herbarium which M. Th. Kotschy had gathered last year in Koordistan and in the vicinity of Mossul and Aleppo, has been favourable to the commencement of this scheme. The arrangement of these plants is now proceeding, and will be announced as soon as completed. Meanwhile, M. Hohenacker offers for sale the following collections of dried specimens.

1.—Caucasian Plants, a very complete set: first part, containing 570 species, to comprise those species which the

Unio Itineraria has from time to time distributed in the sets I—VIII of Caucasian plants. Price 70 German florins, or 150 French francs.

Ditto, second part, containing 120 species. Price 14½ German florins, or 31½ French francs.

2.—Caucasian Plants; a second and less complete set. First part, containing 400 species, comprising mostly the species which are in the collection No. 1. Price 48 florins, or 103 French francs.

Ditto, second part, containing 150 species. Price 18½ German florins, or 40½ French francs.

At a future time there will be supplements to both these collections (Nos. 1 and 2). Particular care has been taken that the purchasers shall not receive one species alike in these supplementary sets; and where errors in the names of the plants had existed, they are now rectified.

3.—Caucasian Plants, collection 6th, containing 55 species. This includes the species of the sixth livraison of the *Unio*, which some possessors of the preceding five have not yet received. Price 6½ florins, or 14 French francs.

4.—Caucasian Plants, collection 7th, containing 78 species. These are what the *Unio* has not yet published. Price 10 florins, or 21½ francs.

5.—Caucasian Plants, collection 8th, containing 22 species. Price 2½ florins, or 5½ French francs.

6.—Volhynian and Podolian Plants, gathered by Professor Besser, 32 species. Price 3 florins, or 6½ French francs.

Those friends of botany who may wish to become possessed of any of the above plants, are requested, when sending the amount of their purchase-money, to point out particularly which collections they prefer; also to state whether, in case of the sets of Collection No. 1 (containing 600 species), being all previously disposed of, they would be willing to receive No. 2, containing 550 species. Orders to be addressed to

R. F. Hohenacker, Esslingen, near Stuttgard.

Swan River Botany.

Many of our friends, as well as ourselves, have felt great anxiety respecting the fate of those valuable collections of plants and seeds, which it was at length ascertained had been embarked by Mr. Drummond, at the Swan River, in the month of May last, on board the "Shepherd," bound for London. On application to the gentlemen, Messrs. Sewel, Norman and Sewel, to whom this vessel is consigned, they assure us that news has been received of her arrival in China, where she had to take in a cargo, and whence she would proceed direct to England. In the meanwhile, we are sure our readers will peruse with interest the following extracts from letters which have lately come from Mr. Drummond, much in them bearing on those plants which will be found in the collections now daily expected.

Perth, Western Australia,
May 10th, 1842.

"I have just shipped, on board the 'Shepherd,' bound for London, two large boxes, containing about 15,000 dried specimens of Swan River, and sent some account of them in two long letters, which I despatched about a fortnight since.* There are collections of native seeds in these boxes, destined for the Royal Gardens at Kew, and for Baron Hugel. In gathering these seeds, I have aimed to procure chiefly those of ornamental shrubs and plants, which you will see by the dried specimens which accompany them, as the fine *Banksias*, *Dryandras*, *Verticordias* of this country. Among the seeds are some papers containing roots of mixed sorts of *Droseras*, which, from the state in which they now are, I perceive would have vegetated successfully if I had had the opportunity of shipping them direct for London four months ago, as several are now in flower, though they have lain in dry sand for the last half year. The specific name of *bulbosa* is not happily given to any particular plant of the genus *Drosera,* as there are eleven or twelve species here, all exhibiting equal tendency to form bulbs with the one so called; and *stolonifera* is still more inapplicable, as the particular individual is not stoloniferous. Three-fourths of our *Droseras* inhabit the most arid spots in this most arid country; and even those which are not bulbous, resist the heat and drought better than most plants.

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* See vol. 1 of this Journal, p. 626.

" I send you a species of *Melaleuca,* named *M. Leakei* by Mr. Preiss, upon which Mr. Leake particularly desires your opinion, as to whether it has hitherto been undescribed; since Mr. Preiss's situation in this colony rendered it difficult for him to ascertain positively whether a plant was new, or had been discovered previously by British botanists."

Fairlawn, Vasse District,
June 13.

" Having recently mentioned to you a very remarkable plant, which is found to the south of the Vasse Inlet, and which from the few imperfect specimens I had seen of it, appeared to me like a new species of *Dasypogon,* I am anxious to inform you, that having had an opportunity of examining this plant in a growing state, I find my conjecture to be correct. It attains a height of 15 feet, and the circumference of its stem, after the leaves have been burnt off by the bush fires, is 9 inches. The leaves are about three feet long and 2 inches broad at their insertion, gradually tapering so as to be half that width (namely 1 inch) in the middle, and coming to a point. The flower-stalks measure nearly a yard long, and are surmounted with heads of flowers smaller than in *D. bromeliæfolius,* and hispid, but not rough, as in that species. They are about twelve or fifteen in number, and produced from the axils of the upper leaves. In habit, this plant resembles *D. bromeliæfolius,* and creeping at the roots, appears to grow in groups or patches, the young plants bearing so strong a resemblance to a pine-apple, that it would take an experienced eye to detect the difference. To this highly remarkable production, the most striking, perhaps, in the whole colony, I have given the specific appellation of *Hookeri*.

The Vasse Inlet, following the winding of the road, is about 150 miles south of Freemantle; and the *Dasypogon* first makes its appearance on the side of the footpath (for there is no cart-road) to Augusta, about six miles south of the Vasse. When his Excellency, Governor Hutt, visited Augusta, last summer, he presented me with a leaf and head of flowers of this plant, but the leaves were narrower than any which I had observed, although I had travelled among an abundance of it for upwards of twenty miles. I have since learned, from Mrs. Molloy, that the Governor's specimens were gathered at M'Leod's Creek, about eleven miles to the north of Augusta, and this settlement, again, is supposed to be about sixty miles from the Vasse. Augusta is situated at the mouth of the Blackwood River, believed to be the same as the Beaufort, as the Williams River is now ascertained to be identical with the Murray.

The curious *Asphodelous* plant which I found at King George's Sound, is common in the Vasse district, and I gathered one specimen of it in flower. The prickle-like petals, or bracts, are purple at the period of inflorescence; there are six anthers, about an inch long, borne on filaments of the same length, which are attached at their bases to the six interior petals: the style overtops the anthers by about a quarter of an inch.

By far the finest species of *Boronia* I have ever observed in Western Australia, grows on the banks of swampy brooks between the Vasse and Augusta. Captain Molloy informs me he has seen it as high as his head, when riding on horseback. Its foliage is generally pinnated with four pairs of leaflets and an odd one, an inch long; the footstalks and the flowers solitary, large, and of a deep rose colour, springing from the axils of the leaves, on petioles about half an inch in length, each furnished with two minute opposite bracteas. The plant varies, in having its foliage and stems smooth or hairy.

Under the belief that this truly beautiful species is new, I have given it the name of *Boronia Molloyi,* after the lady of Capt. Molloy, late of the Rifles and now Government-Resident of the Vasse District. You may have heard Capt. Mangles speak of Mrs. Molloy, who has sent him many seeds and specimens of the productions of this country; she has long been ardently attached to Botany, and cultivates plants with great success. The *Maurandia Barclayana*[*] grows on her house and blooms abundantly, climbing to the very roof, and in her garden I first saw that lovely *Phlox*[†] which you named after my deceased brother, and which flowered there for the first time in this colony: Mrs. Molloy had previously shown me a drawing of this species, in the beautiful groups of annuals published by Mrs. Loudon.

During my late journey, which I undertook principally to obtain accurate information of the above-mentioned *Dasypogon* in a growing state, concerning which I had heard many contradictory accounts, I met with several *Proteaceæ* that had never before fallen in my way. One of them, belonging to the genus *Lambertia,* grows thirty feet high, with a trunk three feet in diameter. Judging from some imperfect flowers which still remained on the shrub, the blossoms appear to be greenish-yellow, and not very conspicuous or showy, and the species belongs to the one-flowered division of the genus. This character, however, is by no means invariable, for in two or three individuals of this plant, I have observed the flowers in pairs. The tree itself has the bark as rugged as an English Elm. Along with this *Lambertia,* and rivalling it in height and thickness, grew a *Hakea,* that was new to me; its bark too was of a similar character. It appears nearly allied to *H. mixta* (Lindl.) or, at least, to what I suppose to be an arborescent variety of that species, for the common *mixta* is here a bushy shrub, only about four or six feet high: but this wants the filiform foliage altogether, and is an entirely distinct species. I also found two other *hakeas*, that I had not seen before; and two more individuals of the genus *Manglesia*; which make my number of species in that latter genus amount to either seven or eight.

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[*] Botanical Register, tab. 1108.

[†] *Phlox Drummondii,* discovered in Texas by the late Mr. Thomas Drummond; Bot. Mag. tab. 3441.

During this journey I observed about a dozen kinds of the interminable papilionaceous division of the *Leguminosæ*, which struck me as novelties, though few of them were in flower, and also seven or eight *Acacias*. Captain Molloy showed me a beautiful *Convolvulus*, growing on his grant of land near Toby's Inlet, which is perhaps identical with one which I mentioned to you some time ago. I procured a few seeds of it, which shall go by the next opportunity, and in the meantime I send a flower and leaf, with two small specimens of the lovely *Boronia Molloyi*, and will take care to transmit some very fine ones, which the lady, whose name it bears, has kindly preserved. The curious *Malvaceous* plant,* called by you after your late correspondent who lived at Formosa in Van Dieman's Land, is common on the rich swampy ground of Captain Molloy's grant, and I think I possess another kind, with broader foliage and a more dwarfish mode of growth. At the Swan I have got two or three undescribed *Asters*.

I regret being unable to furnish you with seeds of *Dasypogon Hookeri*; but before quitting this place I hope to procure a supply of growing specimens of it, and of the *Asphodelous* plant, and to set them in Captain Molloy's garden, whence he will forward them to me when opportunity offers of transmitting them to England in a state of vegetation.

Hawthornden Farm, Toodjay Valley,
June 26, 1842.

"As it is my desire to continue sending home dried specimens of all the plants in Western Australia, accompanied by collections of the seeds of such as shall appear worthy of cultivation, so I mean to leave this place about the beginning of October, bending my course first towards Mount William and Saddleback. Afterwards I shall investigate the mountainous country behind Cape Leuwin and Cape Naturaliste, which, from what I have already seen, promises to yield a rich harvest of botanical novelties, and thence ascending the Blackwood River, which I believe to be identical with the Beaufort, I hope to reach the same spot where I crossed it in my inland journey to King George's Sound, and so to travel south in that direction. During this expedition I shall be accompanied by my eldest son, and we shall hardly return to the Swan before the close of February; the object being to collect this season all the seeds we possibly can secure of the southern plants.

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* Lawrencia :—L. *spicata*, Ic. Plant. Tab. 261, 262, and *L. glomerata*, Ic. Plant. Tab. 417.

I have just been examining a very curious individual of the natural order *Ampelideæ*, perhaps a *Cissus*, though undescribed, if such, by De Candolle; but my want of a good magnifying glass renders it difficult for me to make out the number of its stamens, and often baffles me in the investigation of nearly allied plants. The leaves are cut, like those of the *Parsley-leaved Grape*, and the inflorescence is very small, borne in a sort of corymb, like *Cissampelos*, and succeeded by berries, which, when ripe, are blue, and contain, if perfect, four seeds. No plant can well be rarer than this appears to be; I have known it for the last four years; but growing in a single spot and only two or three plants of it. Perhaps its natural tendency is to climb, for each corymb is furnished with a tendril like the Vine; but where I have found it, on the top of a Quartz-stone hill, there is nothing for it to climb upon. When botanizing lately in the vicinity of the Vasse, I met with two species of an interesting *Proteaceous* plant, which I was inclined to refer to Mr. Brown's genus *Agastachys*; but his description led me to doubt it. In proceeding southward, these plants first made their appearance in the open mahogany forest, after crossing the Capel River: they appear to be herbaceous. One bears a few lance-shaped leaves, growing close to the ground, but the great bulk of the plant is formed of much divided green branches, from two to three feet high, and interwoven in such a mass as to resemble the flowering branches of *Statice Tatarica;* the blossoms are numerous, lilac-coloured, and highly fragrant and produced near the ends of the slender branches. The second species differs in having bracteas, which run along the principal stems and terminate in bluntish leaves; this plant is of rather lower growth than the first: the points of the slender branches are triangular, and its blossoms were not expanded. I gathered this latter kind in the vicinity of King George's Sound, and I think you will find specimens of it among my *Proteaceæ,* in the large box.

During my late expedition to the south of the Vasse, my opportunities of discovering luminous phosphorescent *Fungi** were rather better than I could have wished. For several days and nights I was incessantly wet to the skin, my lucifer matches incapable of ignition from the damp, and my hands blistered with making a fire after the native fashion; when, one night, after all my efforts to procure a fire had been unavailing, I descried afar off, in the forest, a tree which I imagined must have been set in a blaze by lightning. On making my way to it, I found that the light was produced by a remarkable *Agaric,* which grew, tier above tier, up the trunk of a dead *Eucalyptus occidentalis.* The species is different from that which I described in a former letter: the upper surface of the pileus being nearly black in the centre and the gills milk-white. This curious property appears to be not uncommon among those *Agarics* which have the stem at one side of the pileus, and grow on dead wood."

July 18th, 1842.

"Having written to you from Fairlawn, the residence of Captain Molloy, Government-Superintendent of the Vasse District, and given you an account of a few plants which I found principally between the Vasse and Augusta, I now take the liberty of annexing some short extracts from the Journal which I kept on that journey.

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* Vol. 1. p. 215.

My friend, Mr. Harris, Senr. having been appointed Surgeon to the Australind Company, in the place of the late Dr. Carpenter, I gladly availed myself of the opportunity thus afforded of having his company in my excursion, and started with him on the 17th of May. Mr. Harris, though not one of the earliest, has always been among the most active and enterprizing settlers at the Swan, and as he had many adieus to take, it was late in the day before we quitted Perth, and equally late on the following (the 18th) ere we left Freemantle. I should have stated that I rode my favourite grey pony "*Cabbine*;" this word is a native one, corresponding best perhaps with the English "*Perhaps*," and, signifying uncertainty, and a blending of hope and fear, is not inapplicable to the animal which a Botanist rides. He was, however, so called by the Natives. Mr. Harris travelled in a cart upon springs, and as both he and I were old experienced bushmen, we did not forget to carry a good supply of necessary provisions. We reached Clarence, a deserted village, where Mr. Peel and his people first settled, about nine miles south of Freemantle, before dark that evening, and made tea at one of his old wells. Here I observed the Hottentot's Fig* of the Cape, which had become naturalized, and was displaying its large flowers, of a yellow colour; whereas our indigenous species has rose-coloured blossoms, as I have seen it growing on the coast. The fruit of both is alike indifferent, indeed the only good fruit produced by this tribe of plants, and the best, perhaps which we have, is that of a *Mesembryanthemum*, with small lilac flowers, which grows commonly on the banks of the Salt river, and other places of the interior. After taking our tea, we proceeded six or seven miles farther, and halted for the night in a grove of *Blackboys*. Grass being plentiful every where along the coast line of road, there was less difficulty in choosing our resting place. On such occasions, I have only to let Cabbine, who is one of the best and quietest of the Timor race, go loose, when he eats his fill, and, having done so, comes and lies down by my side.

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* *Mesembryanthemum*, I presume. ED.

Early in the afternoon of the 19th we arrived at Mandurah, the residence of Thomas Peel, Esq. one of the largest land proprietors in this Colony, where we stopped for the night. Mandurah is situated close to the outlet of that great estuary, which receives the waters of the Serpentine, Murray and Harvey rivers, and is about forty miles to the south of Freemantle. Few spots are more beautiful and the soil excellent, lying over limestone. Mr. Peel's garden is in a rich valley near his dwelling, and abounds with vegetables throughout the year, which here grow almost spontaneously. In it I noticed a very pretty species of *Aster*, growing like a weed, and near it I observed, so as to recognise it, your *Lawrencia spicata* (Icones Plantarum, Tab. CCLXI, and CCLXII;) but I have seen the same, or what is perhaps an allied species, on the rich flats at the head of the Swan; and also a dwarf-growing, broad-leaved kind, between the Swan and Wallup. The large sheets of water, many miles in extent, into which the three above mentioned rivers empty themselves, appear to me one of the remarkable features in this part of the country; they abound with fish of many sorts, ducks, &c. as well as black swans.

On the 20th Mr. Harris and I started for Pinjarra, about fifteen miles distant, whither our road lay across the estuary, so as to avoid crossing the Serpentine, over which there is neither ford nor bridge. But missing our way, we got to the south of the Murray as well as the Serpentine. On discovering our error, we had to retrace our steps, plodding in the water above our middles for four hours, so that it was dark ere we reached Mr. Armstrong's farm, called Ravenswood, about nine miles only from Mandurah, where we staid all night. The next day, as neither Mr. Harris nor I felt inclined, after our exploits in the water, to travel very far, we dined with Mr. Tate, a young Irish gentleman, who has lately settled on the right bank of the Murray, about two miles above its junction with the Dandelup. This latter is a small river, remarkable for the fertility of its banks, which are nearly level with the stream; unlike those of the Murray, which are much elevated above its waters. In the latter case, of course, there is no alluvial deposit, though the soil, a strong loam, when manured, will yield heavy crops of wheat. The margins of the Murray river are covered with a beautiful *Banksia,* with nearly entire leaves, which I suppose to be Mr. Brown's *B. verticillata;* though, to me, it hardly appears specifically distinct from the long narrow-leaved kind, of which I have sent you specimens in the last collection. A fine new *Manglesia,* to judge from its foliage, grows on the sloping bank of the river, immediately at the back of Mr. Tate's present residence, for he is not yet moved into his new house. This species is much like Tab. CCCXXXVII, of your Icones Plantarum; but with leaves more than twice as long and narrower, perfectly smooth, of a deep green and not glaucous, as in that species. It attains the size of a small tree, with a rough bark, very different in these respects from the one you have figured, which is a spreading bush, remarkable for its glaucous foliage and stems. Both are aquatics, at least inhabitants of river-banks, and their seed-vessels are much alike. On the banks of the Murray I also observed a shrub, with willow-like foliage and seeds in clusters, resembling those of *Hornbeam,* which I had never seen elsewhere.

About two miles above Mr. Tate's house is the far-famed Pinjarra, a most excellent farm of Mr. Oakley's, who also keeps a comfortable inn and store there. This spot is noted in the history of our Colony, as being almost the only place where any approach to a pitched battle has occurred between the settlers and natives, ever since the first occupation by Europeans of these districts; the aborigines, owing to the extraordinary idea which they entertain, that the white people are the spirits of their deceased relatives, have always been disposed to receive the new-comers as friends. Even Yagan, who for many years was the terror of the Swan and Canning Districts, never hurt a white person except in revenge for injuries, real or imaginary, which he or his friends had sustained; and thus he eventually became the murderer of six or seven Europeans, soldiers and civilians. Up to the time of Yagan's death, about as many black men had been killed by the settlers. But it is a most unfortunate characteristic of these natives, in common with many savage nations, that when they cannot take reprisals on the offending parties, they wreak their vengeance on the relatives and friends; thus making the innocent suffer for the guilty, too often on both sides. Shortly previous to the battle of the Pinjarra, it so happened that a Serjeant Barron, of the 63rd regiment, the first soldiers sent to do duty at the Swan River, and who had become a settler at Perth, went into the bush in search of some horses, which belonged to him, near Mr. Peel's residence, and was accompanied by a private of the 21st, which had succeeded the 63rd. A native whom they met, offered his services; but instead of leading the two whites to the horses, as he had promised, he conducted them into a thicket of *Blackboys*,* where they found themselves surrounded by the armed aborigines, who speedily killed the soldier, and would have done the same to the Serjeant, had not the fleetness of his horse enabled him to escape. He received however, two spears in his body, and there can be no doubt he was a marked man, for he had rendered himself obnoxious to the black people, while in the army, probably in the performance of his duty. I may mention that the soldier who was set to flog Yagan, when the latter was a prisoner on the island of Carnac,† had six spears driven into him by Yagan after the latter made his escape, the very first time afterwards that he was met on the mainland.

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* The species of *Xanthorrhœa* are so called, because their stout cylindrical trunks are blackened by the natives burning the grass which surrounds them.

† Carnac is a small island, between Rottenest and Garden Island, whither Yagan and some other natives had been sent as prisoners. Thence they contrived to give their keepers the slip, and securing a small boat, escaped

Such was the state of affairs in the Murray District, when the Governor, Sir James Stirling, Captain Ellis, superintendent of police, Mr. Norcote and several individuals of the mounted police, some soldiers of the 21st, and gentlemen on horseback, being engaged in a surveying expedition, arrived at Pinjarra, which is the nearest ford across the Murray River, after leaving the estuary. On reaching this place, having learned that a large body of natives had encamped a little to the south, the Governor directed Captain Ellis, with the officers, to go and demand some of those black men, who were charged with the murder of the soldier above mentioned, and the attack on Serjeant Barron. These functionaries were received with a shower of spears, and one having struck Captain Ellis on the temples, he tumbled from his horse, and either in consequence of the injury or the fall, died in a fortnight. One of the policemen was wounded in the arm, and several horses received spear wounds. After the officers had fired repeatedly on the natives, the latter divided into two parties; one, taking to the south got clear off, but the other which made for the tord, were followed by the police, and met in front by the Governor and his company. They then plunged into the water, and continued swimming about, hiding under the banks and among the bushes: but, sixteen or eighteen were shot, among them some women. It is sad to think there is no reason to suppose that these natives either anticipated any attack from the white people, or intended doing them injury, but had simply congregated for the purpose of hunting and feasting upon the Kangaroos.

We spent the night of the 20th at Pinjarra, and I examined the banks of the river for plants, and gathered *Anigozanthus*

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to the mainland, but Yagan had particularly observed the soldier, who had been deputed to flog him for misconduct while on the island, and dogging him from place to place, fell on him and left him for dead. The soldier, however, recovered.

flavida, the large green variety, which I had never seen nearly so far to the north. Also a large *Leguminous* shrub, with whorled leaves, that I had only found in one locality, many miles to the south.

On the 21st we proceeded on our way towards Australind, and in about twenty miles reached the estuary of the Harvey, or the southern extremity of the embouchure of the Murray. We had two miles of water to pass through, but accomplished it in safety before dark. We had still to spend a couple of nights in the bush before reaching Australind, but nothing worthy of record took place.

Australind is situated on the Leschenault estuary, which is formed by the waters of the rivers Collie and Preston. In the immediate vicinity of the town, the soil is sandy; but the situation highly beautiful. My companion, Mr. Harris, had long been anxiously expected; and I had letters of introduction from His Excellency Governor Hutt, to Mr. Clifton the Chief Commissioner, which procured me the notice of his amiable family, who invited me several times to dinner. Mrs. Clifton is a near relation of the late Mr. Barclay of Bury-hill. Mr. C. expressed his willingness to assist my views in any way in his power, and introduced me to Messrs. Plowes and Gibson, two young gentlemen, merchants in Australind: the latter is well acquainted with the Reverend Mr. Bree, an English botanist, whom I had known both by sight and by reputation; but as my botanical pursuits led me farther from Australind, I started from that settlement on the 30th of May, and after spending a day with Mr. Andrew Stirling, a near relation of our late Governor of that name, at Bury-hill, near Bunbury, the seaport for Australind, I visited a farm on his (Sir James Stirling's) estate, held by Mr. John Scott, an old settler at the Swan. The establishment of the town of Australind has been highly advantageous, as affording a ready market for the produce of their farm, both to Mr. Scott and his industrious, kind-hearted gude-wife, named Nelly Scott. The 1st of June, the anniversary of this colony, proving a most wet and tempestuous day, I found myself storm-staid at Mr. Scott's, but it was impossible that I could have been in better quarters.

The next morning I started for the Vasse, but found the road very indistinctly tracked. In fifteen miles I reached the Capel River, the property of Sir James Stirling, and having heard a description of a highly beautiful *Convolvulus*, growing near the fording place, and forming lovely festoons from tree to tree, I looked out for it, but could find nothing of the kind. Soon after crossing the Capel, I observed the elegant *Beaufortia decussata* and *Johnsonia lupulina*, which I had never seen before, except near King George's Sound.

Five miles farther on, I crossed some hills of secondary limestone, covered with immense trees of *Eucalyptus* (I think *E. occidentalis*, Hugel) ; but whatever be the species, this was by far the largest tree in Western Australia ; the footstalks of this gigantic species are united, several together, flat, nearly a quarter of an inch broad. It surpasses all the other inhabitants of the forest, both in height and breadth, and thickness. Some miles before reaching this forest, I met with a remarkable plant, whose foliage bore some similitude to the European *Yew*, but rather longer, more pointed and glaucous ; it is a low growing diœcious shrub, forming patches, several yards in extent. The male flowers resemble a compound of many blossoms of the *Yew*, but I must state that I only observed them remaining on the plant in a withered and dry state ; the female flowers I did not see, but they had been succeeded by ripe fruits, about the size of a middling plum, and of a beautiful purple colour, covered with rich glaucous bloom. It is impossible to present a more tempting appearance to the eye than does this fruit, and when I showed it, and specimens of the shrub which bore it, to Mrs. Molloy, she assured me that it was equally good to the palate, and when she had resided at Augusta, that a soldier had brought it to her from somewhere on the Blackwood River. To me, this small tree appears more closely allied to the *Yew*, than anything else with which I am acquainted. A curious plant also came in my way, near the Vasse, very much like what is figured and described in the *Icones Plantarum*, Tab. CCXXXVII., it belongs to *Compositæ*, and under the yellow flowers there are five glandulous filaments.

I reached Mr. Chapman's farm at the Vasse Inlet, soon after dark, and received there the kindest possible welcome, and next morning proceeded up the Vasse Inlet, to Cattle Chosen Busseltown; which, as the name implies, is one of the best dairy farms in Western Australia, though the whole district of the Vasse is noted for butter and cheese. Mr. Bussel is brother-in-law to Mr. Taylor, late of King George's Sound, a Scotch gentleman, who, having realized a considerable fortune, and relinquished the intention of returning to his native land, now lives with him. By these gentlemen and Mrs. John Bussel, wife to the eldest son, I was kindly pressed to stay at their house, but Mrs. Molloy being a Botanist and an old acquaintance, I could not do otherwise than remain with her, during my abode in this neighbourhood.

I have already given you some account of the plants which I met with to the south of the Vasse, but I omitted one, a lanceolate-leaved *Stylidium*, which I found in flower, and had already sent you some specimens of, from King George's Sound. The weather rendered this excursion both unpleasant and unprofitable, the heavy rains keeping me wet, day and night: the whole time, nearly a fortnight, my shirt was soaking on my back; so I will not annoy you with a recapitulation of disagreeable particulars; but proceed to say that Captain Molloy, being an old Waterloo man, would not suffer me to depart till after the 18th of June, the anniversary of that battle: and on the night of the 17th there came on, one of the most extraordinary storms I ever knew; accompanied with rain, wind, thunder and lightning. On my return to Australind I found that the Leschenault district had suffered from a similar visitation at the self-same time. Its effects were first visible on a narrow belt of land which lies between the Leschenault Estuary and the sea, where, for about four hundred yards wide, in a direction from north-west to south-east, every tree in the forest had been levelled. The kind of lane, thus formed in the forest, was two hundred yards long, and not a tree was left standing, except a few bare trunks. The storm, after traversing the before-mentioned narrow belt of land, appears to have crossed the Estuary, there about two miles broad, and struck its eastern shore, about a mile from the town of Australind, laying prostrate every tree in its course for about a similar width of space, then ascending the hills and descending into the valleys, right over the Collie and Preston Rivers; but how far it might proceed into the interior, is unknown. In all my travels, I have never witnessed any thing like the effects of this storm, nor heard or read of aught similar. It could not have been a tornado or whirlwind, because the trees were levelled flat all one way. At Perth, the night between the 17th and 18th of June was excessively tempestuous, the hailstones having broken several hundreds of panes of glass.

Two or three days after my return from the Vasse to Australind, I was so fortunate as to meet with an opportunity of forwarding all my specimens as far as the Murray in Mr. Singleton's cart, and accompanying the driver myself. I reached this gentleman's residence, after a four days' journey; which was as pleasant as can be expected in the bush, at this season of the year. Mr. Singleton is the Government-Resident of the Murray District, and the day after my arrival at his house I proceeded to examine the land in his enclosure, where many horses have died, no less than nine, within the last year. Mr. S. was firmly persuaded that this mortality was attributable to some plant, which the animals had eaten among the grass, on its first springing up after the rains. He had carefully examined, after death, the bodies of the horses, and had found that they invariably perished from inflammation in the kidneys and neck of the bladder, producing stranguary, and of course intolerable suffering. My own opinion is that the *Ranunculus Coloneus* of Hugel is the cause of this mischief, for it grows thick among the grass of Mr. Singleton's enclosure, and I have strong reasons for believing that the same plant occasions the blindness with which sheep and goats are commonly seized, after feeding on the rich flats at the head of the Swan and on the Helena and Canning Rivers; several of Mr. Singleton's horses having gone blind, before any other dangerous symptoms supervened. I suspect this *Ranunculus* to have the same effects on animals as are produced by cantharides, when taken internally, upon the human frame.

After spending two days with Mr. Singleton, I found an opportunity of proceeding to Freemantle by Mr. Oakley's cart, and noticed in this journey those species of phosphorescent *Agarics* to which I have alluded in my letter.

J. DRUMMOND.

Additional Observations on the pollen-collectors of Campanula.

In reference to his paper on this subject, given at p. 601 of our First Volume, Mr. Wilson remarks; "I find the same structure in *C. ranunculoides*, as in *C. rotundifolia*, except that the three branches of the stigma become decidedly revolute, and thus come into contact with the pollen lodged upon the collecting hairs; but this does not occur until after the hairs are retracted into their cavities, and consequently long after fecundation may be supposed to have taken place.

"The pollen sends out tubes from four points which are previously visible as circular disks. The pollen-tubes appear to be branched, and much entangled; their diameter not more than one fifth of the tubular cells composing the stigmatic tissue, and on that account they would be very distinguishable if they penetrated that tissue, but I could never find any in that part, and still less within the ovarium. On the other hand, I extracted a grain of pollen from one of the cells of an invaginated hair on the style which exhibited traces of four pollen-tubes.

"In both the species examined, the stigmatic tissue appeared to be composed of very loosely cohering long cylindrical tubes, (not hexagonal) and instead of being more dense and coloured, it was pellucid and colourless."

Extracts from a Monograph of the North American CUSCUTINEÆ;* *by* G. ENGELMANN, M.D., *of St. Louis, Missouri.*

TAB. III. *Figs.* 1—8.

From Silliman's American Journal of Science and Arts, Vol. XLIII. No. for October, 1842.

In directing my attention to the different forms of *Cuscuta* growing in this vicinity, I was surprised to find several distinct species, and a remarkable allied genus; while only a single species (*C. Americana*) is noticed in botanical works. Having been induced to examine particularly both the kinds indigenous to this neighbourhood, and the specimens with which my correspondents in different parts of the country have favoured me, I offer the results of my investigations to the public, with the view of directing the attention of Botanists, through our wide-spread country, to the subject; trusting that this neglected tribe of plants may thereby be farther elucidated.

Order CONVOLVULACEÆ, R. Br.

Tribe 2. *Cuscutineæ*, Link.

Leaves reduced to scales. Embryo spirally rolled round a mucilaginous albumen, without cotyledons.

This remarkable tribe is appended to *Convolvulaceæ*, bear-

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* It is delightful to observe with what rapid strides Botany is progressing in the United States of America. We trust we may now consider that it has a firm footing in the "far West;" for in Dr. Engelmann, now resident there, author of the memoirs from which the following extracts are made, we discover a tact for observation, and a method of describing plants which would do credit to an inhabitant of the most civilized and scientific cities in Europe.—ED.

Pages 185 to 188 omitted in pagination.

ing the same relation to that family as *Monotropeæ* does to *Pyrolaceæ*, and *Orobancheæ* to *Antirrhineæ;* these plants, which may be likened to *Phanerogamous Fungi*, being all destitute of verdure and of proper leaves (bearing scales, in place of the latter, but never leafless, in the full meaning of the term); while, in the structure of their flowers, they agree with plants of the highest organization. They are all parasitic on other vegetables; the *Cuscutineæ* on their stems; most *Orobancheæ* on their roots; and the *Monotropeæ* on their mouldering remains: hence they are obviously analogous to the Class *Entozoa* of the animal kingdom, and may be termed *Epiphyta*, growing on plants. The *Cuscutineæ* are distinguishable from other *Epiphyta* by their growing upon and twining around the stems (and occasionally the foliage of) other vegetables, as well as by their large seeds, resembling those of *Convolvulus*, and presenting a long slender embryo which is spirally coiled round a mass of mucilaginous albumen. *Monotropeæ* and *Orobancheæ* have extremely minute seeds, in some respects similar to the spores of Acotyledonous plants. The seeds of *Cuscutineæ* germinate in the ground; but quickly finding the plants round which they twine, (turning constantly to the left like all *Convolvulaceæ*.) they strike their papillose roots into the epidermis of the stem, from whence they subsequently derive nutriment; their own original stems soon withering away, so that the plant has no longer any direct communication with the earth.

In the *Epiphyta*, each species is, for the most part, restricted to the same or similar plants. This is most constantly the case in the *Orobancheæ*, where the germinating embryo fixes itself at once upon its favourite plant; but, in *Cuscuta*, where the seed germinates in the earth, and the stem afterwards lays hold of that individual which affords it nutriment, it frequently twines round all the plants in its neighbourhood and is capable of extracting from them its food. Some species, however, are more constant in their predilections than others; as, for example, the European *Cuscuta Epilinum* never grows on any plant but Flax; and our

Lepidanche Compositarum is confined to *Solidago*, *Helianthus* and some other *Compositæ*. Yet several, like the European *C. Epithymum*, and the American *C. Polygonorum*, live promiscuously on most of the vegetable productions within their reach, evidently preferring, however, some particular species or genus, and rarely seen, except in its immediate vicinity. I have, therefore ventured, so far as practicable, to name the *Cuscutæ* after the plants on which they grow; in accordance with the nomenclature frequently adopted, of late, in the case of parasites, especially in the genus *Orobanche*, as *O. Galii*, *O. Eryngii*, *O. Scabiosæ*, *O. Salviæ*, *&c.* thereby designating an important circumstance in the history of the plant.

1. CUSCUTA. *L.* Dodder.

Calyx monosepalous, 4-5cleft, persistent. Corolla campanulate or urceolate, 4-5cleft; styles 1 or 2. Capsule 2-celled, 4-seeded.

Twining parasitic plants; stem filiform, simple or generally branched, whitish, yellow, or orange-coloured, with scaly leaves. The inflorescence is a cyme, with a central flower opening first, and axillary or lateral flowers, expanding afterwards; flowers whitish, sessile or pedunculate, more or less clustered and conglomerate in some species, and rather lax (paniculate) in others. First or central flower mostly 5-partite, lateral ones in some species regularly 4-partite, in others almost always 5-partite. Limb of the corolla erect, spreading or reflexed, and together with the stamens either persistent at the base of the capsule or more frequently separated from its insertion, and covering its summit: its texture in some species nearly membranaceous, in others thicker and more fleshy.

Stamens united with the tube of the corolla up to the base of the segments. Near their base, within the tube of the corolla, they bear a scale which is evidently not a distinct organ; but only an appendage of the stamens. These are present in all the species I have examined; sometimes consisting only of one or a few teeth on both sides of the filament (as in *C. Coryli,*) but commonly forming a distinct lamina. In some, they are bifid, in others undivided; but in all either crenulate or fimbriate, or laciniately or pinnatifidly divided; they are erect and appressed to the tube in some species; in others, convergent, closing the tube and including the ovary.

Ovary always 2-celled, 4-ovulate; styles 2 (in a single species united into one), frequently unequal in length; in a few cases supported by a stylopodium. Stigma either filiform (in the European), or capitate (in the American *Cuscutæ.*)

Capsule globose or depressed, crowned by the persistent styles and stylopodium (where the latter exists), 2-celled, sometimes 4-seeded, but oftener by abortion 3-2, and even 1-seeded. In the European kinds, it separates by circumscission from its base, leaving the dissepiment persistent on the calyx; in the American, the capsule does not appear to open regularly, but separates easily from the calyx when ripe.

1. C. *Cephalanthi* (n. sp.); stem high branching, flowers subpedunculate mostly 5-partite, tube of the corolla cylindrical (after flowering ventricose) twice the length of the obtuse spreading segments and of the ovate obtuse calycine lobes; stamens shorter than the limb; scales ovato-laciniate nearly appressed, styles equal to the depressed ovary, capsule depressed covered by the remains of the corolla. (Tab. III. f. 1.)

On *Cephalanthus;* also on *Vernonia, Aster, Bœhmeria,* and other plants (chiefly *Compositæ*), near ponds and swamps about St. Louis, where it is the commonest species. I have observed it, ever since 1833; but always confined to the immediate vicinity of *Cephalanthus.* Jul. Sep.

2. C. *Coryli* (n. sp.); stem branching, flowers peduncled subumbellate, mostly 4-partite; tube of the corolla cylindrical, equalling in length the ovate subacute crenulate inflexed lobes and the acute carinate segments of the calyx, stamens a little shorter than the limb, scales appressed bifid consist-

ing of few teeth, styles as long as the ovary with the stylopodium, capsule depressed covered with the remains of the corolla, crowned by the stylopodium and reflexed styles. (TAB. III. f. 2.)

β. *stylosa* ; styles much longer than the ovary, exserted.

On *Corylus ;* in the Barrens, W. of St. Louis. Aug. Sep.

β. On *Solidago* ; dry prairies near St. Louis.

Nearly related to *C. Cephalanthi,* but easily distinguishable by the shape and proportions of its calyx and corolla and by the stylopodium on its ovary. Scales of the filaments smaller than in any other of our *Cuscutæ* and consisting of 2 teeth on each side of the filament (where it adheres to the tube) thereby indicating the real nature of these singular "nectaries." Rarer than the other sp. and oftener found on dry ground.

3. C. *vulgivaga* (*n. sp.*) ; stem branched, flowers pedunculate somewhat glomerate or more lax, generally 5-partite, tube of the corolla deeply campanulate, longer than the pellucid punctate open (finally reflexed) lobes and the roundish carinate obtuse and slightly crenulate calycine segments, scales convergent fimbriate united at the base, styles about as long as the ovary (with the stylopodium ?) the remains of the cor. persistent at the base of the globose capsule. (TAB. III. f. 3.)

α. *laxiflora* ; flowers in loose cymes.

β. *glomerata* ; flowers conglomerate.

γ. *tetramera,* flowers in umbelliform cymes 3-4-partite.

This species has the widest range of any American *Cuscuta,* but is less restricted to the same family or genus of plants ; indeed I have scarcely met with it twice upon the same. Var. α. is the S. or W. form, β. is from the Northern Provinces, and from Connecticut.

Intermediate, as a species, between *C. Cephalanthi* and *C. Saururi,* but distinguished from both by the carina of the lobes of its calyx being formed of larger uneven prominent cells and by the large pellucid dots in the substance of the corolla, which might be mistaken for glands, but are only large cells. Other slighter differences divide this sp. from one or other of its congeners.

4. C. *Saururi* (n. sp.); stem low branching, flowers 5-parted somewhat pedunculate at length in spikes, tube of the cor. campanulate, equal to the somewhat obtuse campanulate or spreading lobes and longer than the obtuse calycine segments, stamens as long as the limb, scales pinnatifid-laciniate convergent covering the ovary, styles as long as the ovato-globose ovary, with the stylopodium, remains of the cor. persistent at the base of the subglobose capsule. (Tab. III. f. 4.)

Margins of lakes and swamps, opposite St. Louis, growing on *Saururus;* also at Alabama and Texas. Fl. Sep.

Like *C. Polygonorum,* but with stouter stems, larger flowers, larger and convergent scales and ovary furnished with a stylopodium. The season of inflorescence is also much later than any other species. (Tab. III. f. 4.)

5. C. *pentagona* (n. sp.); flowers pedunculate subumbellate small 5-partite, tube of the cor. open campanulate shorter than the long acuminate lobes and the smooth roundish obtuse segments of the 5-angled calyx, stamens shorter than the limb, scales ovate fimbriate converging, styles filiform about equal to the globose ovary, capsule—.(Tab. III. f. 5.)

On *Euphorbia* or *Tragia ;* in Virginia, &c.

Bearing some resemblance to *C. Polygonorum,* but with small flowers, and a 5-angled calyx, of which the lobes are roundish and obtuse, not triangular, &c.

6. C. *verrucosa* (n. sp.); stem low branching, cymes lax few-flowered, flowers (small) long-peduncled 5-partite, tube of the cor. campanulate shorter than the lanceolate acuminate lobes and nearly equalling the ovate subacute segments of the verrucose or somewhat hispid calyx, scales ovate fimbriate equalling the tube, styles as long as the ovary, capsule globose surrounded at the base by the persistent cor. (Tab. III. f. 6.)

a. hispidula ; inflorescence, and frequently also the branches, hispid or glandular-pilose, cal. lobes acute shorter than the tube of the cor.

β. glabrior; cymes more or less glabrous, cal. lobes broader somewhat obtuse, nearly as long as the tube of the cor.

Texas: both vars. together in dry sterile prairies, parasitical (*α.*) on *Euthamia, Aster,* &c.; and *β.* on *Petalostemon* (Drummond 3d coll. No. 247.)

The lowest of all the American species and (with *C. pentagona*) the smallest-flowered; not particular as to the plants on which it grows, but creeping over all indiscriminately. This is the only *Cuscuta* I have ever seen with any approach to pubescence. Allied to *C. Polygonorum;* but distinct by the lax and few-flowered cyme, &c.

7. C. *Polygonorum* (n. sp.); stem low branching, flowers subsessile glomerate mostly 4-partite, tube of the cor. campanulate nearly equalling the acute campanulate or spreading lobes and the acute calycine segments, stamens as long as the limb, scales mostly bifid laciniate appressed, styles as long as the depressed ovary, remains of the cor. persistent at the base of the depressed capsule. (Tab. III. f. 7.)

On different *Polygona,* also on *Lycopus, Penthorium,* &c. Aug. Sept.

Of much humbler growth than *C. Saururi,* &c. with orange-coloured stems, growing in overflowed places, and the margins of ponds, W. of St. Louis.*

2. LEPIDANCHE† (*nov. gen.*)

Calyx consisting of many imbricated scales, persistent. Corolla tubular, 5-cleft; styles 2; capsule 2-celled, 2-seeded. Very similar to *Cuscuta* when young, but assuming a different appearance, when in flower or fruit. The stem, which connects the several clusters of flowers, having then disappeared, the latter only remain, consisting of innumerable crowded sessile flowers and scariose scales, spirally and most tightly coiled (with one or several turns) round the stems of the supporting plant, which, at a distance, looks as if a rope were twisted round it. The flowers are so crowded that many become abortive and, as it were, strangled, presenting nothing but a bunch of scales; while others, which seem perfect, do not ripen their seed.

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* Since the MS. of this article was sent to the *American Journal,* I have observed 2 sp. of *Cuscuta,* mentioned by Sir W. Hooker.

C. umbrosa of Beyrich (Hook. Fl. Bor. Am. v. 2. p. 77) from the N. W. coast and United States.—*C. Saururi? C. vulgivaga, β?*

C. arvensis, Beyrich (C. Americana? Hook. Fl. Bor. Am. l. c.)—*C. vulgivaga, a?*

C. coronata, Beyr. (Hook. Comp. Bot. Mag. 1, p. 173.)—New Orleans, Drummond; on stems of *Laurus Caroliniensis.*

C. Epilinum, Weihe, introduced with flax, Chester County, Pennsylvania, and elsewhere. See *Darlington Flora Cestrica.* ed. 2.

† From λεπις *a scale* and αγχειν *to strangle;* i. e. a scaly plant, strangling those whereon it grows.

The principal difference between *Lepidanche* and *Cuscuta* consists in the calyx, which is not monosepalous but composed of numerous imbricated scales, of which the 2 or 5 that are exterior (being much smaller) may be regarded as bracts, while the 10 inner, (nearly alike in size and shape, crenulated and with reflexed or squarrose summits,) appear to constitute the proper calyx. The corolla and stamens, with their scales, are entirely similar to the corresponding organs in *Cuscuta:* so is the ovary; but the unequal styles are generally longer in proportion, and the stylopodium is as large as the ovary proper, or even larger. The ovary is 2-celled and 4-ovulate; but I have never seen more than 2 seeds, separated by an incomplete dissepiment; and frequently only a single seed ripens.

L. *Compositarum.* (Tab. III. f. 8.)

Var. *α. Solidaginis*; flowers smaller, lobes of the limb reflexed, stylopodium half as large as the ovary.

Var. *β. Helianthi*; flowers larger, lobes of the limb spreading; scales of the filaments united with one another, forming a 5-lobed crown in the tube; stylopodium larger than the ovary.

This singular plant appears confined to the western prairies; as, near St. Louis* (on *Solidago* and *Vernonia*) and at New

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* Certainly the *Cuscuta Americana* (Hooker, *Comp. to Bot. Mag. v.* 1. p. 173) found by Drummond at St. Louis, and its aspect thus described:—"Some specimens have all the flowers abortive and apparently turned to scales, which are densely crowded, and form a thick wreath, of a pale straw colour, round the branch of some shrub."

Albany, Indiana (on *Silphium*). The second variety, which may prove a distinct species, grows on *Helianthus*, in similar localities.

Flowers always 5-partite; tube not exactly cylindrical, but a little wider at the mouth than at the base, rather obconical. Styles longer than in any of our *Cuscutæ*, and almost always unequal, and inserted on a distinct stylopodium, also the largest in the genus. Stigma capitate, a character common to all the American species.

While the above was actually in type, we have the pleasure to receive the following remarks from the Author, in a letter dated St. Louis, Feb. 12, 1843.

"Since the Memoir in Silliman's Journal was printed, I have had occasion to examine a large collection of Texian *Cuscutæ*, and have investigated this neighbourhood again and again, and am now able to correct some important mistakes in my paper, and to publish some new species of *Cuscuta* as well as one of *Lepidanche*. These additions and corrections I have sent to *Silliman's Journal*, but am ignorant whether they are likely to appear soon in that work, which, as you are aware, is the only American Journal, not edited by some Society. I can hardly hope that the notice which you so kindly promise to insert in the *London Journal of Botany*, should not have appeared ere this can reach you; still it may be as well to state those alterations, &c., which I find necessary to make. But, in case you realize the hope so agreeably held out, of lending me your collection of *Cuscutinæ*, for examination further changes will, of course, be needful. There is one thing which I much regret the impossibility of rectifying, and that is the *names*, which I, at first, thought very appropriate for the species; being under the impression that each *Cuscuta* grows, more or less, upon the same or similar kinds of plants. But I am now convinced this is entirely a mistake, ample proof having been given that the identical same species often grows upon totally different plants, without the least variation in its characters. I should therefore have wished to change *Cuscuta Cephalanthi* to *C. tenuiflora; C. Coryli* to *crenulata*; *C. Saururi* to *C. umbrosa*, Beyr. (they are probably identical); and *C. Polygonorum* to *C. chlorocarpa*. Also *Lepidanche Compositarum* should have been altered to *L. squarrosa*. But, on conferring with Dr. Asa Gray, we thought it imprudent to adopt so extensive an alteration, however desirable it might have been. The names would certainly be more appropriate; except perhaps in the case of *C. umbrosa*, which grows along open sunny ponds as well as in shady places; but still this appellation, being the older one, must be substituted for mine.

The most important corrections are as follows:

C. Cephalanthi is generally 4-parted.

C. vulgivaga has a considerable stylopodium, as the figure 3. *e.* shows.

C. Saururi is distinguished from the foregoing species, less by the proportion of its parts, than by the open corolla, of finer texture, the lobes of the calyx and corolla not orbiculate or ovato-orbicular, but oblong or even linear-oblong.

C. verrucosa is Drummond's plant, which I have received likewise from Mr. Lindheimer, gathered also on *Petalostemon multiflorum*.—*C. verrucosa;* caule ramoso, cymis umbelliformibus, floribus pedunculatis (parvis) 5-partitis; tubo corollæ globoso-campanulato, calycis campanulati verrucosi segmenta ovata obtusiuscula duplo superante, laciniis limbi longe acuminatis subbreviore; staminibus limbo multo brevioribus; squamis ovatis fimbriatis incurvis tubum excedentibus; stylis ovarium globoso-depressum subæquantibus, capsula globoso-depressa. Texas. With this species I have confounded, in my memoir, *C. hispidula;* caule ramoso, cymis laxis paucifloris hispidulis v. subglabris, floribus longissime pedunculatis (parvis) 5-partitis; tubo corollæ turbinato campanulato, calycis segmenta ovata acutiuscula duplo superante laciniis limbi longe acuminatis læviter crenulatis breviore, staminibus limbo multo brevioribus, squamis ovatis fimbriatis incurvis tubum subæquantibus, stylis ovarium stylopodio coronatum subæquantibus, capsula globosa, stylopodio cum stylis coronato.—Texas. Apr. May, in dry sterile prairies.

Very near this species, but much later in flower, with a compacter inflorescence and far larger blossoms, is the following, *C. neuropetala;* caule ramoso, cymis umbelliformibus glaberrimis, floribus pedunculatis (majoribus) 5-partitis, tubo corollæ campanulato calycis segmenta ovato-lanceolata acuta carinata et lacinias limbi uninervias ovatas breviter acuminatas crenulatas patentes subæquante; staminibus limbo paulo brevioribus, squamis ovatis fimbriatis incurvis tubum æquantibus, stylis ovarium stylopodii coronatum paulo superantibus.—Texas, in wet prairies, growing on *Liatris, Rudbeckia, Helianthus, Myrica, &c.* August.

Lepidanche *Compositarum:*—nearly all the remarks made in speaking of the genus refer to this species; since the next and new one differs essentially in habit, and more approximates to the true *Cuscutæ.*

Lepidanche *adpressa;* caule ramoso-elato, floribus arcte sessilibus glomeratis 5-partitis, sepalis 7-9 imbricatis brevissime crenulatis concavis adpressis ovato-orbiculatis, interioribus minoribus, tubo corollæ cylindricæ calycem paululum excedente, lacinias limbi oblongas obtusas patentes bis superante; staminibus limbo brevioribus, squamis pinnatifido-laciniatis convergentibus ovarium includentibus, ovario cum stylopodio stylos æquante, capsula globosa subacuta corolla marcescente obtecta 2-4 sperma.

St. Louis, in rich shady woods, on *Laurus, Rhus, Vitis, Bignonia, &c.* Perhaps the *C. coronata* of Beyrich?

EXPLANATION OF TAB. III.

1. *Cuscuta Cephalanthi, a.* A tetramerous and *b.* a pentamerous flower. *c.* Corolla laid open; *d.* the Ovary; e. vertical section of a half-grown capsule; *f.* Capsule invested by the remains of the Corolla.

2. *Cuscuta Coryli, a.* A flower; *b.* Corolla laid open; *c.* Ovary and styles; *d.* same of var. *β.* *e.* Capsule invested by the remains of the Corolla.

3. *Cuscuta vulgivaga, a. b c.* Flower; *d.* Corolla laid open; *e.* Ovary.

4. *Cuscuta Saururi, a.* Flower.; *b.* Corolla laid open, with the inflexed

scales; *c.* Ovary; *d.* vertical section of the half-grown capsule; *e.* mature Capsule.

5. *Cuscuta pentagona, a.* Flower; *b.* Corolla laid open; *c.* Ovary.

6. *Cuscuta verrucosa, a.* Flower.

7. *Cuscuta Polygonorum, a.* Flower; *b.* Corolla laid open; *c.* Ovary; *d.* Capsule.

8. *Lepidanche Compositarum, a a.* Flower of var. *α.*; *b.* Ovary and Styles of do.; *c.* Flower of var. *β.*; *d.* Corolla of *β.* laid open; *e.* Ovary and styles of var. *β.*

All the figures are magnified.

Figure and description of a new species of THUJA, *from Chili, by* W. J. H.

(*With a Plate.*—TAB. IV.)

Thuja *Chilensis;* ramis (cum foliis) ancipiti-compressis, foliis quadrifariam imbricatis, lateralibus complicato-carinatis ovatis decurrentibus utrinque canaliculatis canaliculis glaucis, intermediis minimis subrotundo-ovatis carinatis stipuliformibus, capsulis nutantibus coriaceis ovatis compressis profunde 4-valvibus, valvis ovatis obtusis infra apicem spina tuberculiformi, duabus quadruplo minoribus, seminibus ala maxima ovali-oblonga.

Cupressus Chilensis. *Gillies mst. in Herb. Nostr.*

HAB. Valleys of the Andes of Chili. *Dr. Gillies, Mr. Lobb.* Antuco, *Mr. Reynolds* (*n.* 78). Laguna de Rauco, Province of Valdivia, *Bridges* (*n.* 731).

A tree from thirty to forty feet high, of great beauty, and well worthy of being introduced to our gardens, where there can be little doubt, from its native regions, whether the Andes of Chili, or the southern provinces of Antuco and Valdivia, that it would thrive well in the open ground, and be a great ornament to our shrubberies. The first knowledge I had of it was from Dr. Gillies, whose mst. specific name I have adopted, and it has since been found by Mr. Reynolds, an American gentleman, Mr. Lobb and Mr.

Bridges, and it probably inhabits all the colder and temperate parts of Chili.

The older branches are terete, clothed with brownish bark: the younger ones pinnate ancipiti-compressed, and clothed with small imbricated leaves in four rows: and these leaves are of two different kinds: the lateral ones, which are exactly opposite and complicato-carinate, so that they may almost be called equitant, their form ovate and singularly decurrent; on both sides is rather a deep groove filled with a glaucous pulverulent substance: the intermediate leaves are very minute, also opposite and stipuliform (like the stipules or amphigastra of a *Jungermannia*, ovato-rotund, obtuse and carinate. Capsules copious, terminal, drooping, about three-quarters of an inch long, coriaceous, ovate, deeply 4-valved; the valves obtuse, each of them below the apex furnished with a short spine-like tubercle: of these valves two (opposite) are about four times smaller than the other two. Seeds four in each capsule, each with an obliquely erect (with regard to the seed) oblong, or ovato-oblong, membranous wing.

TAB. IV. *Fig.* 1. Leafy branches. *f.* 2. Capsule. *f.* 3. The same bursting open. *f.* 4-5. Seeds:—all *magnified.*

On two HYMENOMYCETOUS FUNGI, *belonging to the Lycoperdaceous group, by the* REV. M. J. BERKELEY, M.A., F.L.S. (TABS. V. VI. VII.)

Few Fungi have as yet been received from Southern Africa; but, from the collections hitherto made in that country, it is evident that far the most striking feature is the variety of forms under which the Lycoperdaceous group presents itself to the notice of the mycologist. Not only the common European genera and even species occur, while the curious *Batarrea*, represented by the British species, accompanies them; but we have *Podaxon Carcinomatis*[*] on the ant-hills, differing altogether in habit from any European genus, and several other forms, either more or less allied to those which have long been recognised, or quite unlike both in habit and character. It is to two of the latter that the attention of the mycologist is now directed, presenting as they do a most curious combination of characters and highly interesting matter for reflection as regards affinity.

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[*] The specific name is so spelt in the Linnæan Herbarium, where the original specimen remains in excellent preservation.

One of these has already been shortly characterised by Kunze,[*] from whom I have received a beautifully-executed sketch and a portion of the hymenium, which leave no doubt as to the identity of my plant with his. The other, as far as I can discover, is altogether new to science. Both form part of the rich collection of Sir W. J. Hooker, by whom they have been kindly placed in my hands.

I shall proceed at once to the characteristics of the genera, reserving my remarks on their affinities to the close of the memoir.

SECOTIUM, *Kze.*

Volva universalis (-peridium) demum subobliterata. Stipes distinctus non cellulosus e fibris flaccidis compositus in speciminibus optime evolutis cum hymenophoro confluens. Hymenium subtus liberum gyroso-cellulosum, cellularum parietibus ab hymenophoro l. apice stipitis nascentibus et ab illis nequaquam discretis. Sporidia cum pedicello limoniformia cellularum parietes vestientia, nucleo globoso. Flocci nulli. Est ubi stipes non ad hymenophorum attingit sed ipse hymenio terminatur.—Fungus boletiformis terrestris Hymenangium stipitatum volvatum referens. Nomen ab σηκωτος *cellulosus* ductum.

Secotium *Gueinzii*, Kze. *Flora*, 1840, *p.* 322. (TAB. NOSTR. V.)

In arenosis Promontorii Bonæ Spei detexit Gueinzius, 1839. In Uitenhage, Decembri, Zeyherus.

Volva universal, clothing the base of the stem and pileus, smooth, white, at length entirely vanishing below, and only to be seen satisfactorily in unexpanded specimens. Stem $2\frac{1}{2}$ inches high, obese below, about $\frac{1}{2}$ an inch thick at the point where the volva becomes free, soft and elastic, with the central fibres paler and less compact, composed of rather flaccid filaments, mixed with more slender filaments whose walls do not collapse, attenuated upwards, and then more or less expanded, either clothed above entirely by the hymenium, or continued into the very thin hymenophore, and connected with the hymenium on either side above the expansion. Pileus or hymenophore 2-3 inches broad, subhemispherical or ovate, unequal, clothed permanently with the volva, smooth, white, areolate, when dry, giving off, as well as the top of the stem, more or less numerous plates, continued from its substance, which ramify and form a spongy crumb-like hymenium, which is perfectly free below. Walls of the cells clothed with yellow-brown, lemon-shaped sporidia, about $\frac{1}{3500}$ of an inch in diameter, attached by a short peduncle, and containing a large globose nucleus. The apiculus at the top of the sporidia is seen only in certain positions. In one specimen the volva is torn off regularly at the base, and remains partially attached to the edge of the pileus within its cavity, under the form of a distinct ring. M. Kunze, in his letter on the subject, informs me that he saw no trace of a volva in his specimens. But it is clear from his admirable sketch, that the stem was already elongated, and then no clear vestiges of the volva remain below. The walls of the cells are scarcely powdery, but coated with sporidia, exactly as in *Hymenangium*, to which genus *Rhizopogon albus* of Eng. Fl. as far as the specimen found by Klotzsch is concerned is certainly referrible. Bulliard's *Tuber album* belongs to a totally different group, being entosporous and not exosporous.

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[*] Flora, 1840, p. 321.

POLYPLOCIUM, *n. gen.*

Volva universalis ampla persistens. Stipes distinctus non cellulosus e fibris flaccidis compositus cum hymenophoro confluens. Hymenium subtus liberum gyroso-cellulosum, demum in processus grossos aculeiformes fœtiscens; cellularum parietibus ab hymenophoro nascentibus tandem discretis. Sporidia minuta copiosissima ovata nigra immixtis floccis tenuibus pellucidis parce ramosis cellulas implentia. Nucleus unus alterve globosus.—Fungus boletiformis terrestris fœdissime inquinans. Nomen a *πολυπλοκος* formavi.

Polyplocium *inquinans*. (Tab. vi. vii.)

In ripas fluvii Orange river dicti in Africa australi detexerunt *Domini Burke et Zeyher*.

Volva universal, clothing the base of the stem and pileus, smooth, white, at length bursting irregularly, and forming a broad ragged persistent cup, nearly 3 inches broad. Stem obese below, nearly six inches high, 2½ inches thick at the point from whence the volva is given off, attenuated upwards, so as to be 1 inch thick where it joins the pileus into which it gradually expands, soft and elastic, consisting of closely compacted flaccid fibres, arranged more or less in fascicles, which terminate abruptly at the sides. Pileus 5 inches broad, hemispherical, clothed with the adnate volva, smooth, rather wrinkled, and areolate when dry, clothed beneath exactly as in *Boletus* with the cellular hymenium. The cells proceed from the substance of the pileus, and are arranged more or less vertically. In a portion of the hymenium they separate into a number of coarse tooth-like processes, while in other parts the connexion of the cells is not broken; the whole hymenium at length easily separates from the pileus, exactly as that of *Boletus*. The cells are filled with an immense number of minute, dark purple-brown, or almost black sporidia, mixed with copious, pale, pellucid, slightly-branched, inarticulate flocci. The sporidia are ovate, with one or rarely two globose nuclei about $\frac{1}{6000}$ of an inch in diameter. The thickness of the flocci is somewhat less than that of the sporidia.

It may now be considered as a well-established fact, that the puff-ball group, however different in their mature state, form a part of the vast division of *Hymenomycetes*. In my memoir on the subject, I have stated that I was first led to suspect this to be the case, by the resemblance between the hymenium of a young *Boletus*, and that of a *Lycoperdon* in its early stage of growth. I was not however prepared to expect so striking a confirmation of such a view as that exhibited by the two genera described above. In general outward form, and in the disposition of the hymenium, nothing can be stronger than the resemblance between these genera and *Boletus;* and while in *Secotium* the hymenium is permanently united with the hymenophore, and the cells simply bear the sporidia, which are not extremely numerous on their walls without the presence of accessory flocci, in *Polyplocium* the hymenium at length is completely separable from the hymenophore, and more distinct from the stem, which is, as in *Boletus*, completely confluent with the pileus, and the mass of cells, which contain innumerable minute sporidia, accompanied by abundant flocci, is at length broken up, at least in parts, into hydniform processes.

The connexion exhibited between the *Tuberiform Hymenomycetes* and Boletus is scarcely less interesting. The hymenium of *Secotium*, as far as can be judged from dry specimens is as nearly as possible identical as to structure with that of *Hymenangium*. *Secotium* may be considered theoretically as consisting of an *Hymenangium*, supported upon a stem, and protected by a volva; and the more the stem penetrates the *Hymenangium* (= Hymenium) the more close is the resemblance to *Boletus*. The genus *Gautieria*, which has no peridium, belongs apparently to the group of *Clavariæ*, approaching to *Sparassis*. If this notion be correct, there appears at present to be no known *Lycoperdaceous* genus, except those described above, in which a portion of the hymenium is perfectly free from any integument.*

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* Dr. Montagne has just sent me the characters of a genus very closely allied to the above, to which he assigns the name of *Gyrophragmium*. It is founded on *Montagnites Dunalii*, Fr. In external characters, it is nearly identical with *Polyplocium*, but there are no flocci with the sporidia. Dr. Montagne remarks, that the volva is in reality the lower part

Explanation of the Figures, TABS. V. VI. VII.

TAB. V.—*Fig.* 1. Secotium Gueinzii, *nat. size.* *f.* 2. Vertical section of the same, *nat. size.* *f.* 3. Sporidia in different positions, *highly magnified.*

TAB. VI. VII.—*Fig.* 1. Polyplocium inquinans, *nat. size.* *f.* 2. Vertical section of the same, *nat. size.* *f.* 3. Flocci and sporidia, *magnified.* *f.* 4, 5. Ditto, *highly magnified.*

On some Entomogenous SPHÆRIÆ. *By* REV. M. J. BERKELEY, M.A. F.L.S. (*with a Plate*, TAB. VIII.)

It has been long known that certain clavariæform fungi are produced on larvæ and pupæ of insects, and one species which has excited much attention is developed on full grown wasps. In the former cases it appears that the Fungus is uniformly produced on insects which have gone into the earth to undergo their transformation, and proceeds from the anterior part of the body. The Guêpes végétantes, as they are called, are wasps infested with a very long often twisted fungus, which, if we may believe what has been reported on the subject, without however giving heed to such fables as those of Father Torrubia,* at least commences its developement on the living wasp, and, according to Dr. Maddiana,† arrives at its full growth during the life of the insect, though at length reduced by its parasite to the last stage of debility.

Several species have been noticed, but three only at present are admitted. I have no doubt however that the production first noticed by Réaumur in Mémoires de l'Académie des

of the peridium, a remark equally applicable to *Polyplocium* and *Secotium.* It is, however, the same organ as the universal veil of a volvate *Agaric.* So close is the resemblance of the *Gyrophragmium* to many of the higher *Hymenomycetes*, that its affinity with *Lycoperdaceæ* escaped the notice even of the great Swedish mycologist. If any thing more were wanting to prove the alliance of *Lycoperdaceæ* to the higher *Hymenomycetes*, this fact alone would be sufficient.

* Apparato para la Historia Natural Española in Madrid. 1754.

† Annals of Lyceum of Nat. Hist. of New York, vol. i. pt. 1. 1824, p. 125.

Sciences, 1726, p. 302, under the name of Hia Tsao Tom Tchom, a drug much esteemed in China, whose properties are detailed by Duhalde, vol. 3, p. 490;—that by Watson and Hill in the Transactions of the Philosophical Society, 1763, vol. 53, p. 271, in their Memoir on Mouches Végétantes des Caraibes, and admirably figured by M. Fougeroux de Bondaroy in Mémoires de l'Académie Royale des Sciences, 1769, Mémoire sur les Insectes sur lesquels on trouve des plantes; and thirdly the parasite of the guêpes végétantes are so many distinct species. A fourth and most extraordinary species is one sent by Dr. Joseph Hooker from Australia.

Unfortunately in none of these species have I been able to detect perfect asci and sporidia, by which probably they would be as well characterised as the already described species. The characters therefore given will be necessarily imperfect; but my object is not so much to establish the species as to collect them together, leaving to future observers the task of completing what I am unable to render perfect. When the genus *Sphæria* shall have been revised, all will be arranged in *Hypocrea.*

1. Sphæria *militaris,* Ehrh.

2. Sphæria *sphecocephala,* Kl. *in Hook. Herb.*; lenta, pallida, stipite longissimo tortuoso: capitulo brevi subclavato.

Jamaica, *Dr. Bancroft.* St. Vincents, *Rev. Lansdown Guilding.* And in other islands of the West Indies.

The whole appearance of this species is very different from that of any state of *Sphæria militaris.* The name given to it by Klotzsch with the authority of Künze attached to it, is clearly a wrong transcription of Künze's name in Myc. Hefte, for a somewhat analogous form of *Sp. militaris*; viz., *S. sphærocephala.* It is, however, so good that I have retained it. It is much to be desired that correct information should be obtained by some one resident in the West Indies as to the developement of this species, and more perfect specimens procured than those in the collections of the British Museum, and Sir W. J. Hooker, to which alone I have had access. The heads in these are dotted with the young perithecia, but there is not the slightest vestige of asci or sporidia.

3. Sphæria *entomorrhiza*, Dicks.

4. Sphæria *sobolifera*, Hill (sub Clavariâ) carnosa, pallide fusca; capitulo subgloboso, stipite æquali tereti prolifero.

Clavaria sobolifera, *Hill. Vide Watson and Hill in Phil. Trans. vol.* 53, *p.* 271, 1763. *tab.* 23. *Edward's Gleanings of Nat. Hist. tab.* 335. *Fougeroux de Bondaroy, Mém. de l'Acad. des Sc.* 1769. *tab.* 4. Guadaloupe, Martinica, Dominica on the nymph of a species of *Cicada*. There are several specimens in the collection of the British Museum.

This species is extremely variable in form, but in its most perfect state has a subglobose head and proliferous stem; sometimes the terminal head is not developed and the stem is terminated by a number of little heads, which form a cluster as in a recorded variety of Sph. militaris; sometimes the stem is branched above, each branch being terminated by a little clavate head; sometimes a single head only is developed but tuberculated, and in this case there are no proliferous processes on the stem; and occasionally not only the stem is even, without any proliferous processes but the head instead of being subglobose is absolutely linear as in the two following species. I have in vain examined specimens both dry and preserved in spirits in the hope of finding perfect asci, but the perithecia, though tolerably well formed, contained merely a few threads which broke up into short cylindrical portions. These are probably imperfect strings of sporidia, and if so differ materially from those of Sp. entomorrhiza and *Sp. Robertsii*. The greater part of the figures in plate 5 of Fougeroux' Memoir belong probably to *Sp. entomorrhiza*. The substance figured on a perfect Cicada is a secretion as Mr. Gray showed me in several species in the British Museum.

5. Sphæria *Sinensis*, n. s.; Fusca, stipite cylindraceo deorsum subincrassato; capitulo cylindrico cum stipite confluente apiculato; apiculo sterili. (Tab. VIII. fig. 11. *a. b. c. d.*)

Hia Tsao Tom Tchom. *Réaumur Mém. de l'Ac. des Sc.* 1726. *p.* 302, *tab.* 16. *Rees' Cycl. vol.* 17.

Hia Tsao Tong Tchong. *Duhalde. China. vol.* 3, *p.* 490.

Hea Tsaon Taong Chung. *Westwood, Ann. of Nat. Hist. vol.* 8, *p.* 217.

China. *Mr. Reeves.* Collection of Brit. Mus.

Attached by simple or very sparingly branched, very slender flexuous inarticulate threads, which spread more or less over the surface of the caterpillar. The substance of the caterpillar is replaced by a tough mass of very fine branched threads, which are far more compact than those in the substance of the fungus, mixed with colourless oil globules. The head is sometimes split into two or three linear portions.

This species is a celebrated drug in the Chinese Pharmacopœia, but from its rarity only used by the Emperor's Physician; it resembles in its properties those of Ginseng, being a strengthener and restorative, but does not like that cause hemorrhage. Father Perennin states that he was raised from a state of extreme weakness by the use of this medicine, which was administered, dressed in the body of a duck. The Chinese name refers to the notion that it is a herb in summer and a worm in winter. The specimens figured by Réaumur were imperfect, and therefore their true nature was not recognised, but the fungus was supposed to be a portion of the root of some plant to which at a certain stage of growth the caterpillar attached itself. It is sold in little bundles tied up with silk. I have seen several of these, but have not been able to find any in which the perithecia were fully developed.

Tab. viii. fig. I. I. Sphæria Sinensis; *nat. size:* one specimen with the head longitudinally splitting. *a.* radiating appearance of a fractured stem; *b.* filaments from the base of the stem; *c.* globules from the body of the caterpillar; *d.* filaments forming the central substance of the fungus-bearing caterpillar—all more or less highly *magnifid.*

6. Sph. *Robertsii,* Hook.—Sp. Hugelii. *Corda. Ic. Fasc.* 4. *cum opt. analysi.*

On the larva of *Hepialus virescens,* Doubleday. New Zealand.

The following valuable information was transmitted by Dr. Joseph Hooker, of H. M. Discovery ship, Erebus. "About *Sphæria Robertsii* I collected all the information and as many specimens as I could, but am still much at a loss to account for its developement. They are found in spring generally under tree ferns; the caterpillar is buried in the ground as is the lower portion of the fungus. Now both these fungi (i. e. this and the following species) belong to caterpillars which bury themselves for the purpose of undergoing the metamorphosis; and both Mr. Taylor and Mr. Colenso hold the same opinion that in the act of working the soil, the spores of the fungus are lodged in the first joint of the neck, and the caterpillar settles head upwards to undergo its change, when the vegetable developes itself. I do not remember, you have remarked in your "Icones," that the entire body of the insect is filled with a pith or corky vegetable substance, and that the intestines are displaced, which my specimens in spirits shew well, and then what does the muscular fibre of the animal become? It must I suppose be all turned into vegetable, for the skin of the creatures remains quite sound all the time. This change may take place from the displacement of one gas and developement of another; it also occurs in the dark, and is hence somewhat analogous to the formation of Fungi on the timber-work in mines. However this may be, the whole insect seems entirely metamorphosed into vegetable with the exception of the skin and intestines."

As in silk-worms attacked by *Botrytis Bassiana,* it is most probable that the caterpillar lingers a short time till the vital organs are clogged up with the mycelium. It does not appear that in any case it has made any progress with its coccoon. We are indebted to Mr. Dieffenbach for the knowledge of the moth to which the larva belongs.

7. Sphæria *Taylori,* n. s. stipitibus fasciculatis connatis

anastomosantibus; stromate breviter palmato rufo fulvo subtiliter velutino; ramis compressis; apicibus acutiusculis. (TAB. VIII. f. II. *a*, *b*. *c*.)

Banks of Murrambidgee. Australia. *Mr. Adams.*

Springing from the head of an extremely large caterpillar. About six stems grow from the same point, forming a compact cylindrical mass 2½ inches long, ¾ of an inch thick, connate slightly branched and anastomosing; expanding slightly upwards, and giving off a branch of short much compressed forked and palmate branches, which are dotted above with the perithecia. The apices are somewhat pointed. The colour of the whole is a deep red brown, inclining to tawny when dry. The whole of the branches are clothed with a very thin coat of extremely short forked irregular flocci, which give the surface a dull appearance when dry. They are at first solid, but at length become hollow. A portion of the caterpillar is filled with a white corky substance, for the root is more or less coated with a spongy mass, consisting of very slightly branched wavy threads.

The only specimen I have seen was not mature, but probably arrived nearly at its full growth as the incipient perithecia were evident towards the tops of the branches.

The following notes are from a letter of Dr. Joseph Hooker:—The information he states was received from the Rev. Mr. Taylor of Waimate. "This caterpillar Fungus was picked up on the banks of the Murrambidgee River, 10 miles from the township of Yap (in New Holland) in a rich thick alluvial soil, with many others of the same kinds. When fresh it was 8 inches long, and 3 inches of the fungus from the nape of the neck were buried under ground, on the surface of which is the oval or circular flower-like bunch of branches of a brown velvety appearance when fresh. The caterpillar has a great resemblance to the green wattle caterpillar, which produces a large brown moth. The discoverer Mr. John Allan, the only person who has heard of it, found many empty holes near, as if the chrysalis had been hatched, and he saw many empty shells of these grubs scattered about the same place, and at night the brown moths were so numerous as to be quite troublesome. The body of the insect was solid and pithy; the outer skin attached to the substance of the centre which has no roots in it; and moreover the pith is of the same substance as the stem, which is as thick if not thicker than the body of the caterpillar. Both the pith and stem when burnt have a strong animal smell. Mr. Allan saw nearly 30 about March, 1837.

TAB. VIII. fig. II. Sphæria Taylori, *nat. size ; a.* a. magnified branchlets; *b.* filaments of sponge about the root, highly *magnd. ; c.* do. from velvety surface, *do.*

I cannot close my paper without due acknowledgement to Mr. I. E. Gray and Mr. White of the British Museum for their kind assistance in the prosecution of my inquiries. Several other fungoid productions on insects are preserved in our National Museum, but none certainly referrible to the genus Sphæria.

Enumeration of the Plants collected by R. B. HINDS, ESQ., *and by* MR. BARCLAY *in the Feejee Islands, Tanna, New Ireland and New Guinea; to which are added a few species gathered in Amboyna by* MR. BARCLAY. *By* GEORGE BENTHAM, ESQ.

(*Continued from p.* 676 *of Vol. I.*)

Thespesia *populnea,* Corr. *Feejee Islands,* Mr. Barclay.

Abelmoschus *moschatus,* Mœnch. *Friendly Islands,* Mr. Barclay.

Sida *microphylla,* Cav. *Feejee Islands,* Mr. Barclay.

Heritiera *littoralis,* Ait. *Feejee Islands,* Mr. Hinds.

Heritiera *Fomes,* Symes? Not in fruit, but the foliage has more the appearance of H. *Fomes* than of H. *littoralis. New Ireland,* Mr. Barclay.

Melochia *odorata,* Forst. *Tanna,* Mr. Hinds, Mr. Barclay; *Friendly Islands,* Mr. Barclay.

Grewia *mallococca*, Linn. Fil. *Friendly Islands*, Mr. Barclay.

Elæocarpus *oppositifolius*, W. et Arn. *Aceratium oppositifolium*, DC. *Amboyna*, Mr. Barclay.

Vavæa *Amicorum*, gen. nov. *Vavao, Friendly Islands*, Mr. Barclay.

Char. Gen. VAVÆA. Sepala 5-6, æstivatione leviter imbricata. Petala totidem, hypogyna, æstivatione imbricata. Stamina 15-20, corolla breviora, inæquilonga. Filamenta basi glabra, in tubum disco adnatum monadelpha, superne libera, hirsutissima. Antheræ introrsæ, biloculares, loculis longitudinaliter dehiscentibus. Discus hypogynus cupuliformis, carnosus, ovarium cingens et ei æquilongus. Ovarium intra discum sessile, hispidum, triloculare. Ovula in quoque loculo duo, angulo centrali affixa. Stylus simplex. Stigma crassum, peltatum, obscure triradiatum.

V. Amicorum. Frutex? v. arbor? Rami glabri, ramuli juniores pubescentes. Folia simplicia, in apices ramorum approximata, alterna, obovato-oblonga, obtusa, emarginata v. obtuse acuminata, basi in petiolum brevem angustata, tripollicaria, chartaceo-membranacea, penninervia, supra glabriuscula, subtus sparse hirtella. Stipulæ lineari-lanceolatæ, villosæ, deciduæ. Flores cymosi ad apicem pedunculi axillaris folio brevioris. Inflorescentia tota pubescens. Bracteæ parvæ. Sepala lanceolata, villosa, 1 lin. longa. Petala intus extusque puberula, sepalis longiora, crassiuscula, oblonga, obtusa. Discus intus pilosus. Filamentorum villi antheris longiores.

In the only specimen I have seen of this plant the flowers are not quite expanded, and the fruit being unknown, it is difficult to say to what order it should be referred. It is however evidently allied to *Ixionanthes* of Jack, a genus placed by Endlicher doubtfully at the end of *Cedrelaceæ*, but which I have not had an opportunity of examining.

Micromelum *glabrescens*, sp. n., foliis junioribus inflorescentiaque tomentellis, foliolis 10-12 oblique ovatis acuminatis minute crenulatis adultis glabris, calyce brevissime

5-dentato, fructu oblongo obtusissimo. This is evidently very near M. *pubescens*, Blume, but does not quite agree with his very short description. The leaflets are quite smooth, except in a very young state. The inflorescence is a dichotomous many-flowered terminal cyme. The flowers appear very small, but are as yet unexpanded in the specimen before me. The fruit is about 4 lines long. The foliaceous cotyledons are very broad, deeply emarginate and twisted, with rather a long straight radicle. *Friendly Islands*, M. Barclay.

Cuming's, n. 597, 1056, 1355, and 1850, from the Philippine Islands are also species of this genus.

Aglaia *odoratissima*, Blume? ramulis paniculis petiolisque dense lepidotis, foliolis 5 petiolulatis ovatis v. ovali-oblongis brevissime et obtuse acuminatis utrinque sparse lepidotis.—Foliola 3-4-pollicaria, subcoriacea. Paniculæ amplissimæ, floribundæ, floribus parvis globosis. Antheræ 5, rarius 6, infra medium tubi staminiferi inserta. The specimens answer to Blume's specific character, but that is too short for identification. *New Guinea*, Mr. Hinds; *Tobie Island*, Mr. Barclay.

Meliacea. Too imperfect to determine. *Friendly Islands*, Mr. Barclay.

Meliacea, *Lansio* affinis. Folia glabra, foliolis oppositis trijugis cum impari. Inflorescentia racemosa? brevis. Capsula baccata, subglobosa, pollicem diametro, 5-locularis, loculicide 5-valvis. Semen in quoque loculo unicum, axi centrali affixum, testa carnosa versus axin incrassata. Embryones interdum 2 collaterales nec superpositi. Radicula supera. Cotyledones crassi, carnosi. Specimens in fruit only, *New Guinea*, Mr. Hinds.

Tristellateia *australis*, A. Rich. Voy. Astrolab. 2. 38., *New Ireland*, Mr. Hinds.

Cardiospermum *halicacabum*, Linn. *Feejee Islands*, Mr. Barclay.

Schmidelia *glabra*, Roxb. ex Wall. Catal. n. 8057. This is certainly very near S. *serrata*, but, at the time of flowering, even the rhachis is perfectly smooth; the fruit also appears to be larger. The filaments are very hairy, but these hairs appear to exist also, though in less abundance and only at the base of the filaments, even in Dr. Wight's specimens of S. *serrata.* *New Guinea,* Mr. Hinds; *New Ireland,* Mr. Hinds, Mr. Barclay; *Amboyna,* Mr. Barclay.

Harpulia *cupanioides,* Roxb. Fl. Ind. ed. Wall. 2. 442. This precisely resembles Roxburgh's specimens, except that the flowers are perhaps rather smaller. The genus is now commonly referred to *Cupania,* but, if so, Endlicher's character must be considerably modified. The ovary of *Harpulia* is always bilocular, the stamens 5 only, the seeds pendulous and attached nearly to the top of the cell, &c. *New Guinea,* Mr. Hinds; *Tobie Island,* Mr. Barclay.

Colubrina *Asiatica,* Brongn. *Ceanothus Asiaticus,* Linn. *New Guinea,* Mr. Hinds.

Leea sambucina, Willd. L. *staphylea,* Roxb. *New Guinea,* Mr. Hinds.

Zanthoxylum (Aubertia) *varians,* sp. n., glabra v. apicibus vix puberulis, foliis longe petiolatis trifoliolatis integrisque, foliolis sessilibus elliptico-oblongis obtuse acuminatis basi longe angustatis, paniculis axillaribus folio vix brevioribus, floribus hermaphroditis, ovariis glabris.—Color siccitate pallide flavicans. Ramuli crassi, primo juventute adpresse puberuli, mox glabrati. Folia subopposita, cujusve paris sæpe inæqualia, ad apicem petioli bipollicaris 4-8-pollicaria, pleraque trifoliolata. Foliolum terminale æquilaterum, lateralia valde obliqua et basi inæquilatera, limbo in petiolum communem breviter decurrente, omnia penninervia, glabra, tenuia, creberrime pellucido-punctata. Folia superiora sæpe simplicia, foliolo terminali cæterum similia. Paniculæ axillares v. supra-axillares, laxæ, parum ramosæ, juniores pubescentes. Pedicelli 1-1½ lin. longi, hispiduli, secus rhachim fasciculati v. racemosi. Sepala 4, ovata, hirsuta, æstivatione valvata. Petala 4, ovato-oblonga, acutiuscula, sepalis subduplo longiora, apice recurva, æstivatione valvata. Stamina 4, petalis paullo breviora. Antheræ connectivo acu-

minatæ. Ovaria 4, glabra, intra discum 4-lobum ovariis ipsis longiorem affixa. Ovula in quoque loculo 2, collateraliter affixa, at alter erecto altero pendulo in loculo quasi superposita. Styli 4, breves, filiformes, apice in unicum coalita. *Feejee Islands*, Mr. Hinds, Mr. Barclay.

Canarium *asperum*, sp. n., foliolis 5, petiolulatis oblongo-ellipticis obtuse acuminatis basi rotundato-truncatis subtus scabris ad venas petiolisque hirtellis, stipulis parvis subulatis, racemis axillaribus, floribus subsessilibus glomeratis, staminibus liberis, disco sex-partito, drupa monosperma.—Rami verrucosi. Foliola 4-5-pollicaria, rigidula, margine ciliata, reticulato-venosissima, supra glabra, eglandulosa. Stipulæ rigidulæ, 2 lin. longæ. Racemi (seu spicæ interruptæ) 2-4-pollicares, rhachide crassa hirtella. Pedicelli brevissimi, crassi. Bracteæ minimæ v. obsoletæ. Calyx urceolatus, obtuse et subæqualiter trilobus, in fructu persistens, demum patens. Petala crassa, calyce fere duplo longiora, æstivatione induplicato-valvata. Stamina 6, petalis breviora, 3 petalis alterna cæteris paullo breviora. Filamenta tenuia. Antheræ ovatæ glabræ. Discus perigynus e squamis 6 obovatis ciliatis constans. Ovarium subglobosum trisulcatum, breviter hirsutum, triloculare, loculis biovulatis. Stylus brevis, crassus. Stigma crassum, obtuse trilobum. Drupa semipollicaris, oblonga; sarcocarpio (in aqua madefacto) crassiusculo, endocarpio durissimo intus nitido. Semen subsigmoideo-oblongum, testa fusca tenui, radicula recta ad apicem fructus spectante. Cotyledones valde plicatæ. *New Guinea*, Mr. Hinds.

From the above account it will be seen that this species differs from the characters given to the genus by the valvate petals and the deeply lobed, or rather sexpartite disk. The other characters are however entirely those of *Canarium*, and it is probably very near to C. *hispidum*, Blume. The fruit and seed, excepting in size, correspond exactly with Gœrtner's figure of C. *sylvestre*. The cotyledons are plicate and apparently lobed in the same manner, but owing to their fragility and to their cohering together in the not quite ripe

seeds I have opened, I have been unable to ascertain their precise form.

Cardiophora *Hindsii,* gen. nov. Terebinthacearum. *New Ireland.* Mr. Hinds, Mr. Barclay.

Char. Gen. CARDIOPHORA. Flores polygamo-monoici. Fl. masc. Calyx liber, sepalis 3 brevibus persistentibus. Petala 3, carinato cucullata, per anthesin deflexa, persistentia. Stamina 6. Discus carnosus in glandulas 3 bifidas divisus. Fl. hermaphr. Calyx, petala, stamina et discus ut in masculis. Ovarium sessile, compressum, apice bilobum, lobis brevibus obtusis, intus biloculare. Ovulum in quoque loculo unicum, angulo centrali lateraliter affixum. Stigmata 2, crassa, singula in ovarii loborum margine interiore sessilia. Fructus compressus, obcordatus, crasso-coriaceus margine tenui, medio incrassatus, indehiscens, bilocularis. Semina in loculis solitaria, hilo oblongo lateraliter affixa v. subpendula. Testa crassiuscula. Embryo rectus, exalbuminosus, cotyledonibus planis convexis subcarnosis, radicula brevi, conica, ad apicem fructus spectante.

C. *Hindsii.* Arbor ? Ramuli crassi, juniores pube brevi ferruginea obtecti. Folia exstipulata, alterna, simplicia, petiolo subbipollicari adpresso-pubescente subsericeo ; lamina 5-6 pollicaris, oblongo-elliptica, obtusa, basi angustata, penninervis, supra glabra, nitidula, subtus ad venas adpresse pubescens, inter venas glabra, eglandulosa, impunctata. Flores in racemos axillares pubescentes petiolo vix longiores, brevioresve dispositi, secus rhachin fasciculati. Bracteæ minutæ. Pedicelli 1½-3 lin. longi. Flores parvi. Sepala ovata, obtusiuscula, pubescentia. Petala sepalis duplo longiora, acuta, fere glabra. Ovarium jam ante anthesin petalis longius, pubescens. Stamina 3 petalis opposita iis longiora at vixovarium æquantia, 3 sepalis opposita cœteris paullo breviora. Fructus subglaber, 8-9 lin. longus et latus, fere obcordiformis, lobis sinu lato separatis incurvis. Semen fere 4 lin. longum, oblongum, compressum.

This genus differs from the generality of Anacardieæ by the presence of two perfect carpels, both of which usually arrive at maturity. In this respect it is allied to the *Spondieæ*, but differs from either of the genera referred to that tribe by the trimerous flowers, the form of the fruit, and other characters.

Crotalaria *quinquefolia*, Linn. *Tanna*, Mr. Barclay.

Tephrosia *purpurea*, Pers. *Feejee Islands*. Mr. Barclay.

Desmodium *umbellatum*, DC. β villosum. *Feejee Islands*. Mr. Hinds, Mr. Barclay.

Desmodium *triquetrum*, DC. *Amboyna*, Mr. Barclay.

Phylacium *bracteosum*, Bennett in Horsf. Pl. Jav. Rar. 159, t. 33. *Amboyna*, Mr. Barclay.

Mucuna *monosperma*, DC. var. pedunculis elongatis paucifloris. *Tanna*, Mr. Hinds.

Dalbergia *densa*, sp. n., scandens, foliolis 7-11 oblongo-v. ovali-ellipticis obtusis emarginatisque supra reticulato-venosis glabris subtus petiolisque brevissime hirtis, paniculis abbreviatis, floribus secus ramos pedicellatis secundis, bracteolis orbiculatis, calyce glabro, staminibus omnibus connatis.—Affinis D. *volubili*. Foliola 1-1½ pollicaria. Paniculæ vix sesquipollicares, e racemis simplicibus racemosisve compositæ, rarius irregulariter cymosæ. Rhachis et bracteolæ ferrugineo-pubescentes. Bracteolæ calyce triplo saltem breviores, et ei appressæ. Calyx glaber, urceolatus, 1 lin. longus, dentibus brevibus latis, infimo cæteris angustiore sublongiore. Corolla glabra, petalis omnibus unguiculatis. Vexillum oblongum, cucullatum, incurvum. Alæ paullo breviores, concavæ, obliquæ. Petala carinalia lato-obovata, obtusa, apice leviter cohærentia. Staminum vagina supra fissa. Antherarum loculi erecti, distincti, bivalvatim dehiscentes. Ovarium stipitatum, glabrum, 2-3-ovulatum. Legumen, quod junius tantum vidi, ei D. *tamarindæfoliæ* non dissimile. *New Guinea*, Mr. Hinds; *Tobie Island*, Mr. Barclay.

Cæsalpinia *nuga*, Ait., *New Ireland*, Mr. Barclay.

Bauhiniæ, sp. An B. *ferruginea*, Roxb. var. bracteolis angustioribus? An B. *semibifidæ* Wall. var. calyce longiore? Perhaps a distinct species from either, but the specimens are too young to determine. *New Guinea*, Mr. Hinds; *Tobie Island*, Mr. Barclay.

Acacia *laurifolia* Willd. *Feejee Islands*, Mr. Hinds.

Bruguiera *Aheedii*, Blume. *Tobie Island*, Mr. Barclay.

Bruguieræ, sp., with small flowers and an angled tigillus, but not in a state to determine. *Tobie Island*, Mr. Barclay.

Cereops *pauciflora*, sp. n., foliis obovali-oblongis longe petiolatis, pedunculis axillaribus bifloris.—Folia bipollicaria, in petiolum pollicarem angustata, apice obtusissima v. retusa. Pedunculi petiolo subbreviores, recurvi, crassi. Bracteæ C. *Timoriensis*. Flores majores. Sepala fere 3 lin. longa. Petala calyce breviora, membranacea, obovato-oblonga, medio lateraliter cohærentia, apice involuta, truncata, triaristata, setis claviformibus, basi angustata. Stamina petalis æquilonga, filamentis apice abrupte attenuatis et inflexo-hamatis. Antheræ sagittatæ acutiusculæ. Stylus e basi incrassato-conica filiformis, stamina subæquans, stigmate obtuso. Ovarium calyci omnino adhærens, uniloculare, ovulis pluribus ex apice pendulis. The ovary is certainly unilocular as described by Decaisne in the Timor species, and not trilocular as Arnott found it in his C. *Candolleana* to which he is disposed to refer Decaisne's plant. The species now described is evidently distinct from both, in the fewer and much larger flowers, narrower leaves, &c. *New Ireland*, Mr. Barclay.

Melastoma *malabathricum*, Linn. *Amboyna*, Mr. Barclay.

Melastoma *polyanthum*, Blume. *New Ireland*, Mr. Barclay. A poor specimen with flowers almost solitary, but belonging with very little doubt to Blume's species.

Osbeckia *angustifolia*, Wall. O. *linearis*, Blume. *Amboyna*, Mr. Barclay.

Monoxora *latifolia*, sp. n., foliis lato-ovatis 3-5-nerviis subtus albicantibus, cymis sessilibus plurifloris petiolo subbrevioribus, calycis tubo glabro. *Tobie Island,* Mr. Barclay.

In the more common *Monoxora spectabilis,* Wight (which is *Myrtus spectabilis,* Blume, and *Myrtus smilacifolia,* Wall. Catal. 3629, and of which besides Wallich's specimens from Tavoy, and Marsden's from Sumatra, I have Malacca specimens, from Cuming, n. 2256 and 2285, the one-flowered pedicels proceed from so short a common peduncle that the inflorescence is an axillary fascicle, the calyx is thickly clothed with a somewhat ferruginous down, and the leaves are oblong or oval-oblong and three-nerved only or with a very slight trace of additional marginal nerves.

In M. *latifolia,* the leaves are twice as broad and usually evidently five-nerved, the peduncles, about three on each side, often bear three or more flowers, and the tube of the calyx is almost perfectly glabrous, the lobes alone (which are much broader than in M. *spectabilis*) being very slightly pubescent and ciliate. The ovary in both species is as described by Wight, one-celled with two parietal placentæ reaching from the apex to a little below the middle of the cell and each bearing a number of ovules irregularly arranged.

A third species of the genus with precisely the same ovary and placentation is *Myrtus trinervia,* Sm., or *Eugenia trinervia,* DC., which may be thus distinguished: Monoxora *rubescens,* foliis oblongis v. ovali-oblongis acuminatis trinerviis subtus tomentoso-pubescentibus ad venas rubescentibus, cymis subsessilibus plurifloris petiolo 2-3-plo longioribus, calycis tubo glabriusculo. Of this I have examined some specimens of A. Cunningham's from Moreton Bay.

The three-nerved canescent leaves of *Myrtus tomentosa,* Ait. give it so remarkable a ressemblance in habit to *Monoxora* that I have been induced to examine with care the structure of the ovary, and have found it to be essentially different from that represented by Wight, Ic. Pl. 2. t. 522, and though nearer to that of *Monoxora* than of *Myrtus,* yet sufficiently distinct from both to authorise the considering that species as forming a genus, for which De Candolle's sectional name *Rhodomyrtus* may be adopted. I find the ovary one-celled, with three thick fleshy double placentæ, projecting to the centre, but without cohering. The margins of each placenta, as they reach the centre of the ovary, turn inwards and bear each a single row of densely superposed ovules, whilst from the centre (or as it were the midrib) of each placenta a spurious dissepiment projects slightly into the cavity so as to separate the two rows of ovules, without however reaching half-way to the centre. The ovary itself in its young state is easily separable from the calyx which encloses it. The *Rhodomyrtus tomentosa* is the only species I am acquainted with, and occurs frequently in collections from tropical Asia. It is Cuming's 1253 from the Philippine Islands and 2264 from Malacca.

Nelitris *Urvillæi*, DC. *Tobie Island*, Mr. Barclay.

Of this genus, besides Barclay's specimens, I have examined Cuming's n. 801, 821 and 1824 from the Philippine Islands and 2271 from Malacca, and East Indian specimens from Roxburgh, Wallich and others. The ovary always appears 8 or 10-celled, although strictly speaking it be tetramerous or pentamerous. The placentation is in fact analogous to that of *Rhodomyrtus*, but the placentæ, instead of meeting only in the centre, cohere together; and the imperfect dissepiments of *Rhodomyrtus*, also reach the centre in *Nelitris*, and are there united with the common axis, so as to divide each cell into two. Of the above mentioned specimens Roxburgh's, Wallich's and Cuming's n. 2271, have the flowers and ovary tetramerous, and belong to N. *paniculata*, Lindl. Barclay's and Cuming's 821 are pentamerous and agree with De Candolle's character of N. *Urvillæi*; Cuming's n. 801 is allied to N. *Jambosella*, but has certainly, like all the others, several ovules in each cell; and Cuming's 1824 is probably a new species allied to N. *Urvillæi*.

Eugenia *vismioides* DC? Prod. 3, 267. *New Ireland*, Mr. Hinds, Mr. Barclay.

Eugenia *rariflora*, sp. n., foliis late ovatis obtusis basi rotundatis crasso-coriaceis nitidis ramulisque glabris, pedicellis solitariis unifloris folio brevioribus adpresse puberulis, calycis puberuli tubo ovato-globoso, limbo inæqualiter 4-partito, laciniis latis obtusis tubo paullo brevioribus.—Folia 2-3 poll. longa, 1½ poll. lata. Pedicelli 6-12 lin. longi. Bracteolæ, corollæ et stamina in speciminibus jam delapsa. Calycis limbi laciniæ majores 2 lin. longæ et latæ. Ovarium biloculare, ovulis numerosis. Bacca oblique ovoidea, calycis limbo coronata. Semina sæpius 2, depresso-globosa, testa crassa, cotyledonibus conferruminatis. *Feejee Islands*, Mr. Hinds, Mr. Barclay.

Syzygium *nitidum*, sp. n., foliis ovali-ellipticis basi cuneatis apice obtuse acuminatis coriaceis nitidis impunctatis, venis subtus reticulato-pinnatis in venam margine parallelam confluentibus, cymis paniculatis in ramis annotinis terminalibus trichotomis, calycis margine repando.—S. *venoso*, DC. affine. Folia breviora, multo rigidiora, supra siccitate glauco-nigricantia, petiolo 2-3 lin. lamina 3 poll. longis. Paniculæ rami crassi, compressi. Calycis tubus per anthesin late turbinatus. Ovarium biloculare, ovulis in quoque loculo 2-3. *New Guinea*, Mr. Hinds; *Tobie Island*, Mr. Barclay.

Syzygium, apparently new but the specimen insufficient for description. *Amboyna*, Mr. Barclay.

Jambosæ sp.?, a very imperfect specimen. *Amboyna*, Mr. Barclay.

Barringtonia *speciosa*, Linn. *Feejee Islands*, Mr. Barclay,

Baringtonia *excelsa*, Blume, Bijdr. ex. D.C. Prod. 3. 269? foliis cuneatis oblongisve breviter acuminatis subserrulatis, floribus secus ramos elongatos paniculæ amplæ sessilibus.—Arbor elata, speciosa. Folia confertim sparsa, sessilia, v. brevissime petiolata, usque ad sesquipedalia, supra medium 5-6 poll. lata. Spicæ adsunt sesquipedales, quarum tres in collectione Hindsiana (eo teste) partem minimam formant paniculæ speciosissimæ. Flores magni, secus rhachim angulatum irregulariter dispositi, alii approximati, alii pollicem inter se distantes. Calycis tubus ovoideus, sulcatus, limbus amplus, bipartitus v. lacinia una alterave bifida 3-4-partitus. Stamina numerosissima, fere sesquipollicaria, antheris parvis globosis. Ovarium 4-loculare, ovulis in quoque loculo 4, per paria pendulis. *Tanna*, Mr. Hinds, Mr. Barclay.

Carica *Papaya*, Linn. *Feejee Islands*, Mr. Barclay.

Cucurbitacea. Apparently a Luffa near L. *acutangula*, but too much injured to determine. *Feejee Islands*, Mr. Hinds.

Passifloracea? A slender smooth plant with deeply three-lobed obtuse leaves, the flowers destroyed. *Feejee Islands*, Mr. Hinds, Mr. Barclay.

Sciodaphyllum *macrostachyum*, sp. n., foliis digitatis, foliolis (9) oblongis ellipticisve breviter acuminatis basi rotundatis coriaceis nitidis glabris, capitulis pedunculatis longe racemosis, floribus 10-12-meris.—Foliola inæqualia, 9-15 poll. longa petiolulis 1-3-pollicaribus. Racemus sesquipede longior. Pedunculi pollice breviores, singuli ex axilla bracteæ ovatæ acuminatæ orti. Flores in capitulo sessiles. Calycis margo integer. Petala 10-12, angusta, in calyptram cohærentia. Stamina totidem, antheris oblongis sagittatis filamento brevi dorso affixis. Ovarii loculi tot quot petala. Stylus brevissimus, crassus, conicus, stigmate radiato terminatus. *New Guinea*, Mr. Hinds.

Araliacea, an Aralia *palmata*, Lam? Folium adest unicum, amplum, nervis palmatis, profunde 9-fidum, laciniis grosse dentatis v. inciso-pinnatifidis. Panicula umbelliformis, in specimine fructifer. Baccæ ovoideæ, 5-6-sulcæ, 5-6-loculares, stigmate sessili. *New Guinea*, Mr. Hinds.

Viscum *orientale*, Willd. *New Guinea*, Mr. Hinds.

Two Loranthi, one from *New Guinea*, Mr. Hinds, the other from *New Ireland*, Mr. Barclay; both perhaps new, but in very imperfect specimens.

Uncaria *appendiculata*, sp. n., ramulis adpresse pubescentibus, foliis ovatis acuminatis basi rotundatis subcordatisve supra hirtellis subtus ferrugineo-villosis, stipulis bipartitis geminisve lanceolatis acutis petiolo longioribus, pedunculis medio articulatis involucratis, laciniis calycinis subulatis

ciliatis, sinubus dente brevi setaceo auctis.—This is near U. *pilosa* in appearance but is readily distinguished by the very slender divisions of the calyx and by the small accessory teeth between each. The surface of the plant is also rather less hairy and the leaves larger. *New Guinea,* Mr. Hinds.

Uncaria *setiloba,* sp. n., foliis ovatis v-ovali-oblongis acuminatis basi rotundatis subtus ad venas ramulisque pilosulis cæterum glabris, pedunculis medio articulatis involucratis, laciniis calycinis subulatis ciliatis, sinubus dente brevissimo nunc obsoleto auctis.—Near the last but without any ferruginous down, the leaves narrower, and the accessory teeth of the calyx smaller or even wanting. I have not seen the stipules. *Amboyna,* Mr. Barclay.

Wendlandia *paniculata,* DC. *Amboyna,* Mr. Barclay.

Bikkia *australis,* DC. var. foliis 4-6-pollicaribus coriaceis breviter et obtuse acuminatis. Perhaps a distinct species but the single specimen is in fruit only. *Tobie Island,* Mr. Barclay.

Hedyotis (Oldenlandia) *multiflora,* Cav? (sub Oldenlandia). Very near O. *racemosa,* Linn., referred by DC. to O. *paniculata,* Linn., but the inflorescence is very lax and broadly paniculate. and by no means racemose. Perhaps it may be the true O. *paniculata,* Linn., if that plant, as supposed by Arnott, be truly distinct from O. *racemosa.* Cuming's n. 575 from the Philippine Islands appears to be the same species with rather more ovate leaves.

Stylocoryne *pepericarpa,* sp. n., tota glabra v. inflorescentia vix tenuissime puberula, foliis ovali-v. oblongo-ellipticis acutiusculis basi angustatis submembranaceis, panicula terminali corymbosa brevissime pedunculata laxe trichotoma multiflora, calycis laciniis latis obtusis. Tota siccitate nigrescit. Ramuli juniores et inflorescentia leviter canescunt. Folia 4-6-pollicaria, supra nitidula, subtus pallida, petiolo semipollicari. Stipulæ latæ, acuminatæ. Corymbus intra folia suprema sessilis v. brevissime pedunculatus, pluries trichotomus. Pedicelli ultimi 1-1½ lin. longi. Calyx linea brevior, tubo subgloboso, limbo concavo, laciniis minute

ciliolatis tubo dimidio brevioribus discum epigynum paullo superantibus. Corollæ tubus 2 lin. longus, extus pubescens, laciniæ paullo breviores, lanceolatæ. Antheræ lineares. Stylus laciniis corollinis paullo longior? stigmate integerrimo? Baccæ magnitudine grani piperis, globosæ, nigræ, oligospermæ. *Feejee Islands,* Mr. Hinds (with ripe fruit only.) *Friendly Islands,* Mr. Barclay, (in young fruit with the remains of a single flower).

Lasiostoma *loranthifolia,* gen. nov. *New Guinea,* Mr. Hinds.

Char. Gen. LASIOSTOMA. Calycis limbus breviter urceolatus, integer. Corolla infundibuliformis, tubo brevi, limbo 4-partito, laciniis æstivatione valvatis, intus basi paleis pilisve membranaceis dense hispidis. Antheræ in superiore tubo insertæ, oblongæ, subinclusæ. Ovarium biloculare, loculis multiovulatis, disco crasso coronatum. Stylus filiformis, stigmate clavato. Bacca subbipartibilis, bilocularis. Semina numerosa, minuta, pendula, in placenta carnosa axi internæ affixa nidulantia.—S. *loranthifolia,* foliis late obovatis obtusissimis. Tota glabra. Rami crassi, carnosi, siccitate rugosi. Stipulæ breves, vaginantes, truncatæ, juniores integræ, mox irregulariter ruptæ, et tardius evanidæ. Folia subsessilia, pleraque bipollicaria, integerrima, basi cuneata, crasso-coriacea, obscure penninervia. Flores in capitulis axillaribus nodiformibus sessiles. Calyces floridi carnosuli, cum bracteis intra capitulum immersi, limbo discum ovarii subæquante. Corolla omnino exserta, 1½ lin-longa, extus glabra, subcarnosa; faux et laciniarum pars inferior intus paleis angustis hyalinis densissime hirtæ, tubus glaber. Bacca ovoidea, 1½ lin-longa, disco carnoso et calycis limbo brevissimo coronata.

This plant has so strong a resemblance to Gaudichaud's figure of *Myrmecodia inermis* (Freyc. Voy. t. 95.) that I should have been much tempted to consider it as the same, were it not that I find the structure of the ovary and fruit so completely at variance with his description. It is true that with an ordinary pocket glass the placentæ have, espe-

cially at the time of flowering the appearance of single peltate ovules attached by their inner surface, but under a stronger glass, especially as the fruit advances towards maturity, these fleshy placentæ are covered with small oblong pendulous seeds more or less imbedded in pulp as in *Gardenia, Randia* and other allied genera. I have not however seen them quite ripe, so as to examine their internal structure. De Candolle refers moreover to *Myrmecodia inermis,* Gaud. the M. *tuberosa,* Jack, whose description differs from the plant before me in several points. The genus *Lasiostoma* now established would belong to the Gardenia. I have adopted for it a name originally substituted by Schreber to Aublet's *Rouhamon* now united to *Strychnos* and extended by Sprengel to include *Myrmecodia,* but now unoccupied.

Lasiostoma *oblonga,* sp, n. foliis ovali-oblongis obtusis. The leaves are scarcely more than half the breadth of those of the preceding species, the bark of the branches smoother, and the flowers smaller but precisely the same in structure. *New Ireland,* Mr. Barclay.

Timonius *Forsteri,* DC. *Burneya Forsteri,* Cham. Schlecht. *Amboyna,* Mr. Barclay.

Ixoræ sp. not distinguishable by the single specimen before me, from I. *Timoriensis,* Decaisne. *Amboyna,* Mr. Barclay.

Vernonia *cinerea,* Less. var. angustifolia. *Tanna,* Mr. Barclay.

Wollastonia *strigulosa,* DC. *Tanna,* Mr. Barclay.

Wollastonia *insularis,* DC ? *Feejee Islands,* Mr. Barclay. The leaflets of the involucre are remarkably obtuse, in other respects it agrees precisely with De Candolle's character.

Ægiceras *fragrans,* Kön. *Tobie Island,* Mr. Barclay.

Myrsine sp. in fruit only. *Amboyna,* Mr. Barclay.

Olea *floribunda,* sp. n., glaberrima, foliis longiuscule petiolatis oblongo-ellipticis obtuse acuminatis basi angustatis subundulatis nitidis, paniculis axillaribus laxe ramosissimis, floribus parvis, calyce profunde 4-fido, corolla fere ad basin 4-partita, laciniis erecto-patentibus concavis. Folia omnino

C. *attenuatæ*, Wall. Paniculæ multo ramosiores. Corollæ dimidio fere minores, petalis vix patentibus nec recurvis. *New Ireland*, Mr. Barclay.

Chætosus *volubilis*, gen. nov. *New Guinea*, Mr. Hinds.

Char. Gen. CHÆTOSUS. Calyx brevis, 5-partitus, sepalis æstivatione imbricatis. Corollæ tubus brevis, ovoideus, faux leviter contracta, subnuda; limbi laciniæ 5, oblongo-lineares æstivatione leviter contorta. Stamina 5, imo tubo inserta. Antheræ exsertæ, in conum connatæ. Glandulæ hypogynæ 5, conicæ, ovario æquilongæ. Ovarium biloculare, ovulis in quoque loculo numerosissimis, placentis dissepimento adnatis. Stylus filiformis. Stigma basi orbiculari impositum, oblongum, apice breviter bicuspidatum. Bacca bilocularis, crustacea, polysperma, seminibus peltatis dissepimento affixis.—C. *volubilis*. Frutex glaber, ramulis volubilibus. Folia opposita, petiolata, ovata, breviter acuminata, penninervia, subtripollicaria. Stipulæ interpetiolare brevissimæ, breviter multisetæ. Cymæ pedunculatæ axillares, 2-3-chotomæ, petiolo paullo longiores. Calyx ½ lin. longus. Corolla intus extusque glabra, tubo lineam, limbi laciniis sesquilineam longis. Faux annula obscura aucta. Filamenta crassiuscula, pilis paucis hirtella, tubo corollæ paullo longiora. Ovarium gynophoro crasso carnoso impositum, tetragono-conicum. Baccæ, in speciminibus immaturæ, late obovoideo-globosæ, 4-5 lin. longæ et latæ, nonnullæ loculo uno abortiente ovoideæ incurvæ. Semina in quoque loculo 4-5; matura non vidi.

This genus would belong to the tribe Carisseæ of Apocynaceæ, but that the stipulary setæ are more evident than in others of that tribe. It has much of the habit of *Gardnera* and appears to come near to the character given to *Picrophlœus* of Blume, but is in several points sufficiently distinct.

Alyxia *laurina*, Gaudich. ad Freycin. 451. t. 62. *New Guinea*, Mr. Hinds; *Tobie Island*, Mr. Barclay.

Apocynacea, not in a state to determine. *Feejee Islands*, Mr. Barclay.

Dischidia *ovata*, sp. n., carnosa, foliis ovatis acutiusculis subtrinerviis, pedunculis axillaribus, corollæ fauce dense pilosa. Habitus Dischidiarum sed utriculi in speciminibus nulli. Folia pleraque sesquipollicaria, latiora v. angustiora, obtusiora v. acutiora. Pedunculi breves, apice nodoso-bifidi. Corolla 3 lin. longa, basi inflata, ad faucem valde contracta et ibidem intus dense pilosa; laciniæ limbi breves, ovatæ. Coronæ foliola membranacea, profunde bifida, laciniis quasi stipitatis oblique oblongis incurvis. Antheræ et pollinia omnino generis. *New Guinea,* Mr. Hinds.

Asclepiadæarum genus novum? *Hoyæ* et *Cyrtocerati* affine. Planta volubilis, glabra. Folia opposita, subcarnosa, lato-ovata v. orbiculata, basi subcordata. Umbellæ interpetiolares? Pedicelli singuli semipollicares. Sepala parva. Corolla rotata? inaperta pentagono-pyramidata, profunde 5 loba, laciniis ovato-triangularibus. Corona staminea 5 phylla, foliolis medio staminum tubo affixis carnosis erectis lanceolatis appressis deorsum in appendicem trilobum patentem productis, lacinia intermedia brevissima dentiformi. Antheræ membrana terminatæ. Massæ pollinis basi affixæ, erectæ. *New Guinea,* Mr. Hinds.

Cordia *subpubescens,* Decaisne, Herb. Tim. 68. Specimina fructifera, fere glabra. *Tanna,* Mr. Hinds.

Plectranthus *Forsteri,* Benth. Lab. 38. *Feejee Islands,* Mr. Hinds, Mr. Barclay.

Clerodendron *inerme,* Br. *New Ireland,* Mr. Hinds.

Vitex *Negundo.* Linn. *Feejee Islands,* Mr. Hinds, Mr. Barclay.

Premna *integrifolia,* Linn?, *Feejee Islands,* Mr. Hinds.

Gmelina *Asiatica,* Linn. *Amboyna,* Mr. Barclay.

Solanum *viride,* Br. Prod. 1. 445? *Friendly Islands,* Mr. Barclay.

Solanum *nigrum,* Linn. *Friendly Islands,* Mr. Barclay.

Solanum *Amicorum,* sp. n., fruticosum, inerme, ramis sulcatis, foliis ovatis obscure angulato-sinuatis supra demum glabris subtus reticulato-venosis ad venas petiolis caule racemisque leproso-tomentosis, racemis lateralibus bifidis multifloris, calycibus 5-dentalis, corollæ profunde 5-fidæ laciniis lanceolatis acutis.—Valde affine S. *Sandwicensi,* Hook., et Arn., sed foliis majoribus subtus venis elevatis numerosis reticulatis prima facie distinguitur. Racemi breves multiflori, pedunculo communi 2-3 lin. longo ramis longioribus, pedicellis fere semipollicaribus. Calyx parvus, tomentosus, dentibus subulatis tubo brevioribus, sinubus truncatis. Corolla extus lepidota, laciniis longioribus et acutioribus quam in S. *Sandwicensi.* *Friendly Islands,* Mr. Barclay.

Solanum *inamœnum,* sp. n., fruticosum, inerme, ramis teretibus tortuosis, junioribus tomentosis, foliis oblique oblongo-ovatis acuminatis integerrimis v. subsinuato-dentatis, supra glaberrimis v. pube rara conspersis, subtus ubique molliter stellato-pubescentibus, racemis suboppositifoliis tomentosis, calycibus angulatis 5-dentatis sinubus interdum dentibus accessoriis auctis, fructiferis parum auctis 5-fidis, corollæ tomentosæ profunde 5-fidæ laciniis oblongis.—Hæc etiam species S. *Sandwicensi* et etiam S. *tetrandro* affinis est. Racemi in specimine omnes simplices, rhachi demum pollicari, pedicellis 2-4 lin. longis apice incrassatis. Calyx florifer parvus dentibus minutis, fructifer parum auctus, laciniis ovatis. Bacca magnitudine fructus *Solani tuberosi.* *Feejee Islands,* Mr. Hinds.

Cyrtandra *latifolia,* sp. n., foliis maximis oppositis (subæqualibus?) oblique ovatis supra junioribus hirtis demum glabratis subtus ad venas petiolisque tomentosis, cymis multifloris longiuscule pedunculatis, calyce 6-partito, laciniis lato-lanceolatis corollæ tubum æquantibus, corollæ limbo subæqualiter 5-partito.—Caulis seu ramus crassus, sulcatus, tomento brevissimo rufescens. Folia ampla et lata, (adest pedale, 7 poll-latum, petiolo pollicari), juniora æqualia, supra breviter hirtella, subtus brevissime et dense tomentosa, adulta (quorum adest unum tantum cujusve paris) membranacea, supra viridia, et nonnisi pilis brevissimis raris glabra, subtus ad venas tenuissime tomentella, inter venas pallida. Pedunculi axillares, 2-3 pollicares. Cymæ umbellæformes, 3-5 radiatæ, pedicello centrali simplici unifloro, cæteris 2-3-chotomis. Bracteæ minutæ. Calyx canescens, 4 lin.

longus, laxus, laciniis demum ad basin solutis acutis. Corolla glabra, tubo incurvo basi postice gibbo, laciniis orbicularibus vix inæqualibus. Stamina inferiora subexserta, antherarum loculis parallelis, superiorum rudimenta minuta. Ovarium vagina conspicua basi cinctum. Stigma bilamellatum. Bacca oblonga. *Tanna*, Mr. Hinds.

Cyrtandra? *calycina*, sp. n., fruticosa? foliis oppositis, altero maximo petiolato oblongo acuminato subdentato, altero nano stipulæforme sessili lanceolato-subulato, pedicellis axillaribus fasciculatis, calyce membranaceo laxo oblique bilabiato.—Habitu C. *frutescenti* affinis. Ramuli juniores et petioli squamis pilisve rufis obtecti, folium cujusve paris alterum 8-9-poll. usque ad pedem longum, superne irregularite dentatum, basi integrum anquitatum, supra, glabrum, subtus ad venas ferrugineo-villosulum. Petiolus crassus, semipollicaris. Folium alterum petiolum folii majoris vix æquans, crassiusculum, carinatum. Pedicelli tenues, semipollicares, uniflori. Flores torsione pedicelli subresupinati. Calyx amplus, coloratus? labiis latis obtussissimis, superiore obscure trilobo, inferiore subbilobo. Corollæ 8-9 lin. longæ tubus superne ampliatus, limbus bilabiatus, labio superiore late amplo lato et breviter 4-fido, inferiore integro angusto (ad medium reflexo?) Membrana adest in fauce sub labio superiore inter stamina. Stamina 2 fertilia, corollæ æquilonga, antheris oblongis, connectivo crasso loculis parallelis; sterilium vestigia nulla. Ovarium vagina brevi cinctum, placentis bifidis circinnatim revolutis, in medio ovario arcte approximatis, lobis undique ovuliferis. Bacca exsucca, ovato oblonga, circa 3 lin. longa. Semina numerosissima, oblonga, testa castanea firma, albumine parco adhærente. Embryo rectus, cotyledonibus brevibus. *New Guinea*, Mr. Hinds.

There are several points in which this appears to differ generically from some species of Cyrtandra, and the remarkable form of the calyx and corolla might furnish good characters. It, however, closely resembles in foliage and habit some of the specimens distributed by Dr. Wallich under his No. 807, with the true *C. frutescens* Jack, a very different plant.

These specimens are in fruit only, and I am unable to ascertain the structure of their flowers farther than that they have not the calyx of *C. calycina.* On the other hand some Cyrtandræ with a very different habit have a membranous tubular calyx. Not having, however, good specimens of any considerable number of Cyrtandræ, I have preferred publishing the species now described under that generic name, to attempting to divide the genus without better materials.

Besides the great inequality of the leaves of each pair, in this and many other Cyrtandræ, the two are not exactly opposite. The great development of the stem immediately under the large leaf of the pair next above, has thrown the small one of the lower pair so much on one side as to give it precisely the appearance of a stipule by the side of the large leaf.

Ruellia *reptans,* Forst. ex Willd. Spec. 3. p. 372. Herba reptans, radicans, glabriuscula v. pilis paucis in caule petiolisque vestita. Rami floriferi 4-6-pollicares, semel bisve furcati. Folia longe petiolata, ovata v. oblongo-ovata, obtusa, grosse crenata. Pedunculi in dichotomiis 1-2-pollicares, floribus terminalibus paucis sessilibus subcapitatis. Bracteæ oblongæ v. lineares. Calyx 5-fidus. Corolla infundibuliformis, limbi laciniis rotundatis subæqualibus. Stamina 4, didynama, inclusa, antheris oblongis, loculis æqualibus. Stigma tenue, bifidum, basi minute nodulosum. Ovula in quoque loculo 6. Characteres fere *Dipteracanthi,* generis vix a *Ruellia* distincti. *Tanna,* Mr. Hinds, Mr. Barclay.

Acanthacea, with much the habit of the preceding; but evidently very distinct. The specimen is not in a state to determine, *New Guinea,* Mr. Hinds.

Boerhaavia *diffusa* Linn. *Friendly Islands,* Mr. Barclay.

Dismochæta *micrantha,* DC. *Tanna,* Mr. Hinds. *Friendly Islands,* Mr. Barclay.

Celosia *argentea* Linn. *Amboyna,* Mr. Barclay.

Actinodaphne *multiflora,* sp. n., foliis subverticillatis 5-6-nis oblongis obtusis subtus glauco-cæsiis glabrescentibus, costis ferrugineis, ramulis petiolisque glabris, florum fasciculis com-

positis densis lateralibus. Affinis ex char. Neesianis A. *angustifoliæ* et A. *glomeratæ*, sed folia minime acuminata. Specimen fæmineum est, umbellis breviter pedunculatis in fasciculo numerosis 5-9-floris. Stamina sterilia hirsuta, apice glabra, exteriora spathulata, interiora ovata. Stylus hirsutissimus, apice æqualiter lobatus. Bacca piso major. *Tobie Island*, Mr. Barclay.

Lauracea, in fruit only. *New Guinea*, Mr. Hinds.

Ximenia *Americana*, *Feejee Islands*, Mr. Barclay.

Cansjera *leptostachya*, sp. n., foliis ovato-lanceolatis longe acuminatis basi angustatis, floribus glabriusculis parvis, staminodiis late obovatis truncatis. Folia fere C. *lanceolatæ* at longius acuminata, basi longius angustata, vix margine undulata. Ramuli glabri. Spicæ breves, graciles, vix minute puberulæ. Flores multo minores quam in C. *Rheedii*, fere globosi. Staminodia fere orbicularia, apice truncata et obscure tridentata. *New Ireland*, Mr. Hinds, Mr. Barclay.

Leucosmia *Burnettiana* gen. nov. *Feejee Islands*, Mr. Hinds, Mr. Barclay.

Char. gen. LEUCOSMIA. Perigonium longe tubulosum, limbo 5-fido, laciniis æstivatione imbricatis. Squamæ ad faucem 5, laciniis alternæ. Stamina 10, 5 adfaucem laciniis perigonii opposita, 5 paullo inferius inserta squamis opposita. Filamenta brevia. Antheræ lineares, versatiles, biloculares, loculis longitudinaliter dehiscentibus. Vagina brevis ovarii basin cingens. Ovarium biloculare, ovulis in quoque loculo solitariis, ab apice anguli interioris pendulis. Stylus longus, filiformis. Stigma crassum, oblongum, leviter emarginatum. Drupa sarcocarpio tenue, putamine lignoso crasso biloculare dispermo. Semen pendulum, exalbuminosum, cotyledonibus crassis, radicula brevissima, supera.—L. *Burnettiana*, Frutex (v. arbor ?) glaberrimus. Folia opposita, exstipulata, breviter petiolata, ovata elliptica v. suprema fere or icularia, brevissime acuminata, integerrima, subcoriacea, nitidula, penninervia, reticulato-venosa, 2½-3½ poll. longa. Flores in capitulo terminali breviter pedunculato circa 10, sessiles. Involucrum in speciminibus nullum, sed cicatrices supersunt

bractearum v. deciduarum v. abortientium. Perigonium gracile, basi et apice leviter ampliatum, extus glabrum, bipollicare; laciniæ limbi crassæ, oblongæ, obtusæ, concavæ, 3-4 lin. longæ, in alabastro valde imbricatæ. Tubus intus hirsutus. Squamæ faucis parvæ, ovatæ. Vagina brevissima, glabra. Ovarium oblongum, leviter compressum, villosum. Drupa magnitudine nucis avellanæ, compresso-globosa, siccitate rugosa, et interdum subdidyma, putamine crassissimo lignoso-fibroso. Seminum testa nigro-fusca.

This genus is evidently allied, both in habit and character, to *Phaleria* of Jack (of which Cuming's n. 763 from the Philippine Islands appears to be a species), but differs in the pentamerous flowers, the scales at the mouth of the tube, the oblong stigma, and the drupaceous fruit, besides other characters of minor importance. I have, at the request of Mr. Hinds, dedicated the species to Sir W. Burnett, Inspector-General of the Navy, a zealous promoter of natural history, and much respected by the medical officers of the navy; regretting, at the same time, that a genus already existing under the name of Burnettia, precludes my fulfilling entirely Mr. Hind's wishes to dedicate one to Sir William.*

Hernandia *sonora*, Linn. *Feejee Islands*, Mr. Hinds.

Omalanthus *pedicellatus*, sp. n., floribus fœmineis in inferiore racemo 1-2 longe pedicellatis, masculis sub quaque bractea solitariis. Similis O. *populifolio* Grah., sed minor, gracilior. Racemi sesquipollicares, graciles, floribus masculis numerosis, solitarie pedicellatis, 9-10-andris; fœminearum pedicellus per anthesin 3-4 lin. mox vero pollicem longus. *Friendly Islands*, Mr. Barclay.

Acalypha *hispida* Willd. *Feejee Islands*, Mr. Barclay.

Acalypha *grandis*, sp. n., fruticosa (v. arborea?), dioica,

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* Since the above has been in type, I have received the January number of the Annales des Sciences Naturelles, in which I find a paper by Decaisne on the Aquilarieæ as a Section of Phymeleæ, in which he reduces *Phaleria* of Jack to *Drymispermum* of Reinwardt, and establishes two new genera: *Pseudais* for the *Dais coccinea* of Gaudichaud, and *Gyrinopsis* for Cuming's, n. 1617, from the Philippine Islands. My *Leucosmia* will be found to be intermediate between these two new genera.

foliis amplis cordatis acuminatis, junioribus ramulis spicisque canescenti-pubescentibus, demum glabratis, spicis elongatis interruptis, fœminearum bracteis reniformibus dentatis. Rami lignosi; ramuli herbacei, in speciminibus fœmineis pube densa canescentes, in masculis glabriores. Petioli 3-4-pollicares. Folia semipedalia et longiora, latissime ovata, obtuse acuminata, grosse dentata, penninervia et basi 5-7-nervia, transverse reticulata, minute et creberrime pellucido-punctata. Spicæ masculæ 3-5-pollicares, interruptæ, floribus dense-glomeratis omnino generis; fœmineæ sesquipedales, rhachi basi nuda, floribus superne approximatis. Bracteæ latæ, dentibus acutis. Flores solitarii, sessiles. Stylorum rami tenues, siccitate purpurascentes. Capsulæ pubescentes. *Feejee Islands*. Mr. Hinds, Mr. Barclay; *Amboyna*, Mr. Barclay.

Acalypha *Amboynensis*, sp. n., fruticosa, monoica, hirtella, demum glabrescens, foliis amplis ovatis oblongisve acuminatis serrato-crenatis basi subcordatis, spicis utriusque sexus distinctis axillaribus elongatis tenuibus interruptis, involucris reniformibus lobatis vix capsulam excedentibus. Habitu præcedenti affinis. Folia minora, angustiora. Spicæ graciliores, masculæ et fœmineæ in eodem specimine. Bracteæ fœminearum multo minores. *Amboyna*, Mr. Barclay.

Mappa *Moluccana*, Spreng. Syst. 3 p. 878, (excl. syn. Rothii), stipulis oblique cordatis acutis, foliis orbiculari-ovatis acuminatis integerrimis peltatis subtus punctatis ramulisque pubescentibus, bracteis cucullatis dentatis. *New Ireland*, Mr. Barclay, a male specimen.

Codiæum *variegatum*, Juss. *C. Moluccanum*, Decaisne. *Tanna*, Mr. Hinds (with variegated leaves), Mr. Barclay (with green leaves.)

Rottlera *acuminata*, Juss. *New Ireland*, Mr. Hinds, Mr. Barclay.

Phyllanthus sp. n.? with female flowers only. *New Ireland*, Mr. Hinds, and another perhaps different, *New Guinea*, Mr. Hinds.

Glochidion *ramiflorum* Forst.? *Tanna*, Mr. Hinds.

Sponia sp. *Friendly Islands*, and another from *Amboyna*, Mr. Barclay.

Boehmeria sp. from *New Guinea,* and another from *New Ireland.* Mr. Hinds.

Elatostemma sp. *New Ireland,* Mr. Hinds, and another. *Amboyna,* Mr. Barclay.

Ficus aspera, Forst. *Friendly Islands,* Mr. Barclay, and two species from *New Guinea,* Mr. Hinds.

Urtica affinis, Hook. et Arn. Bot. Beech. p. 69. *Tanna,* Mr. Hinds.

Antidesma sp. with male flowers only, *Tanna,* M. Hinds.

Piper *fragile,* sp. n., fruticosum, scandens? subradicans, glabrum, dioicum, foliis lato-ovatis orbiculatisve breviter acuminatis basi cuneatis truncatis v. subpeltatis quintuplinerviis coriaceis, spicis brevibus, masculis tenuibus, fœmineis dimidio brevioribus densis, baccis subconnatis. Rami teretes, subcompressi, v. leviter striati, rigiduli, ad nodos fragillimi, internodiis 2-3-pollicaribus. Petioli subsemipollicares. Stipulas non vidi. Folia 2-3-pollicaria, superiora basi subinæqualiter et brevissime cuneata, inferiora basi late et leviter cordata v. (in masculis solis?) breviter peltata, venis plerumque 5, quarum 2 sæpius supra basin ortæ. Pedunculi oppositifolii, semipollicares. Amenta mascula pollicaria, tenuia, densiflora. Bractcæ peltatæ. Stamina 2, lateralia, filamentis brevibus crassis, antheris ovoideis bilocularibus extrorsis. Amenta fœminea vix semipollicaria. Bracteæ peltatæ masculis minores. Ovarium sessile. Stigmata 5, sessilia, recurva, breviter linearia, acuta, crassiuscula. Baccæ sessiles, depresso-globosæ, confertissimæ et cum bracteis subconnatæ, nequaquam basi constrictæ. *New Guinea,* Mr. Hinds.

The specimens are so much broken that I could not ascertain positively whether the cordate or peltate leaves belong exclusively to the males as they appear to do. The species would be included in Miquel's 2nd section of the genus, in which diœcious species are included.

Macropiper *latifolium,* Miquel, Comm. p. 36. *Feejee Islands,* Mr. Hinds. This genus is said to have hermaphrodite flowers, but I cannot find any ovaria in the male spikes of Mr. Hinds' specimens, nor any stamens in a female specimen from Taiti. The *Piper psittacorum,* Endl. from Nor-

folk Island; another species of the same genus is also diœcious as well as the following:

Macropiper *puberulum*, sp. n., foliis ovatis acuminatis basi rotundatis subcordatisve 5-9-nerviis supra glabris demum bullato-rugosis, subtus reticulatis pubescentibus, spicis fœmineis elongatis solitariis geminisve. Ramuli glabri. Petioli 9-18 lin. longi, usque ad medium anguste membranaceo-alati. Folia 3-6 poll. longa, pleraque 2½-4 poll. lata, longiuscule et acute acuminata. Pedunculi petiolo breviores. Amenta fœminea 3-6 poll. longa, tenuia, densiflora. Squamæ peltatæ. Ovarium sessile. Stigmata 3, brevissima, divaricata. Baccæ (siccitate rubræ) parvæ, ovoideo-globosæ, distinctæ at basi parum angustatæ. Flores masculos non vidi. *Feejee Islands*, Mr. Hinds, Mr. Barclay.

Canna *Indica* Linn. *Friendly Islands*, Mr. Barclay.

Hellenia ? *pubiflora*, sp. n., foliis elongato-lanceolatis acuminatis basi longe-angustatis glabris, panicula puberula (ebracteata ?) ramis ultimis 2-6-floris, perigonio exteriore tubuloso, interioris tubo exserto labio basi utrinque appendiculato profunde bifido laciniis bilobis, filamento apice breviter appendiculato, stylo glabro. Folia 1-2-pedalia. Ligula obtusa, 2-3 lin. longa. Paniculæ terminalis rami primarii pauci, secundarii in racemos dispositi, breves, 2-6-flori. Pedicelli 1-3 lin. longi. Bracteæ in speciminibus nullæ. Flores breviter puberuli. Perigonium exterius 4-5 lin. longus, apice trifidus. Filamenti appendiculum ovatum, reflexum. Capsula baccata, globosa, 5 lin. diametro, lævis, 2-3-sperma. *New Guinea*, Mr. Hinds; *Tobie Island*, Mr. Barclay.

Alpinia, sp. n.? A. nutanti affinis, diversa panicula glabra, labio lanceolato-oblongo, basi obscure appendiculato. Flowers very imperfect in the specimen. *New Ireland*, Mr. Barclay.

* Dendrobium (Spatulata) *Mirbelianum*. Gaudichaud, Voyage, t. 38.

This plant, but ill figured by Gaudichaud's artist, belongs to a very curious and beautiful section of Dendrobium, of

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* The account of the nine following Orchidaceæ has been communicated by Dr. Lindley.

which I have several species, including *D. undulatum* R. Br.; *D. macranthum* Ach. Rich. and probably *Onychium affine*; Decaisne. The sectional name expresses one of its chief peculiarities, namely, the petals being lengthened into narrow spatulate bodies, giving the flowers an appearance still more insect-like than is customary in this order. Besides that circumstance the lip is united to the foot of the column into a pouch or horn, and the anther-bed has a horn on its back. They all have distichous leaves and a rigid raceme of strong flowers. At one time I thought they might form a genus, but I believe it is better to regard them as a mere section of Dendrobium.

Dendrobium (Spatulata) *antennatum*; Lindl. sp. n., foliis lanceolatis carnosis obliquè emarginatis racemo oppositifolio brevioribus, sepalis acuminatis, petalis linearibus duplo longioribus reflexis, labello trilobo, venis 5 elevatis rectis per axin, lobo medio ovato acuto plano 3-costato.

The petals of this curious plant are two inches long, and scarcely half a line wide. The leaves are succulent, brittle, and veinless when fresh. *New Guinea*, Mr. Hinds.

Dendrobium (Spathulata) *veratrifolium*; Lindl. sp. n., foliis oblongis obtusis amplexicaulibus 9-11-nerviis, racemo terminali elongato multifloro, sepalis undulatis acutis, petalis spathulatis obtusis planis vix duplo longioribus, labello oblongo obtuso membranaceo, venis tribus elevatis per axin duabusque minoribus lateralibus, lobis lateralibus nanis obtusis intermedio oblongo undulato.

A most beautiful plant, with racemes a foot and a half long, loaded with flowers, whose spatula shaped petals are an inch and more in length.—*New Guinea*, Mr. Hinds.

Dendrobium (Eudendrobium-Grastidium Bl.) *bilobum*; Lindl. sp. n., foliis linearibus obtusis apice subæqualibus bilobis, floribus membranaceis minutis (solitariis ?), sepalis obtusis, petalis duplò minoribus apiculatis, labello libero elongato obovato apice carnoso trilobo: laciniâ mediâ verrucosâ, cornu elongato obtuso.

A small inconspicuous species, with the appearance of Isochilus linearis.—*New Guinea*, Mr. Hinds.

Dendrobium (Eudendrobium) *tridentiferum ;* Lindl. sp. n., foliis oblongo-lanceolatis obliquè emarginatis, gemmis paleaceis, floribus geminis, sepalis lateralibus ovatis carnosis obliquis, petalis lanceolato-oblongis acutis membranaceis, labello carnoso trifido basi tuberculo carnoso lineâque utrinque elevatâ aucto, lobis acutis lateralibus antrorsum curvis intermedio ovato, cornu brevi obtuso.

A broad leaved species looking like D. biflorum to which it is nearly allied. It has fleshy flowers as large as those of D. Pierardi, but quite different in structure.

Dendrobium *bifalce ;* Lindl. sp. n., caule tereti lævigato, folio (solitario?) coriaceo obovato acuto oblique emarginato, pedunculis longissimis rigidis nudis apice paucifloris, pedicellis racemosis erectis floribus triplo longioribus, petalis lanceolatis 3-nerviis membranaceis, labello unguiculato tripartito supra unguem cristâ duplici carnosà bilobâ undulatâ aucto, laciniis lateralibus linearibus obtusis falcatis intermediâ subrotundâ, cornu obtuso incurvo.

This very singular plant exists in an imperfect state in the collection. Its habit is different from that of any Dendrobium I am acquainted with; but since this genus presents great diversity of habit, I cannot attach importance to that circumstance in the absence of a more complete knowledge of the structure of the fructification. In my solitary specimen the main stem is gone, and I have only a couple of rigid peduncles proceeding from a common point, with a surface like that of a small bamboo, and a foot and a half long. With them, but separate from them, is a remarkably coriaceous leaf, 6 inches long, and 2 inches broad in the widest part; but how it fits on the stem there is no evidence to show. The flowers are inserted in a few-flowered raceme at the end of the branches; they appear to have been purple, and some pale colour, and are about as large as those of Aporum anceps. At the base of the middle lobe of the lip are two parallel sharp-ridged fleshy tubercules which occupy the middle of a short unguis belonging to the middle lobe.

Vanda *Hindsii;* Lindl. sp. n., foliis distichis arcuatis canaliculatis (pedalibus) apice oblique emarginatis et excisis, racemo horizontali 10-floro foliorum longitudine, pedicellis floribus 3-plo longioribus, sepalis petalisque obovatis unguiculatis crispis, labelli cornu brevi obtuso lobo intermedio convexo cuneato apice rotundato, lateralibus abbreviatis rotundatis hinc acutis explanatis.

This has quite the habit of Vanda Roxburghii, and its flowers seem to be of the same texture and size. Their colour cannot be judged of from the single dried specimen in Mr. Hind's collection, where, although well preserved, they are black.—*New Guinea*, Mr. Hinds.

Saccolabium *quinquefidum ;* Lindl. sp. n., foliis coriaceis distichis ligulatis (unciam latis) apice rotundatis obliquè emarginatis, panicula ramosâ ramis ascendentibus multifloris, floribus minutis, labelli quinquefidi lobo medio lineari obtuso lateralibus utrinque duobus acutis inæqualibus ascendentibus, calcare obtuso sepalis paulo longiore. *Carteretia paniculata Ach. Rich. Voy. Astrolab. sertum. t.* 4.

A plant with the habit of Sarcanthus paniculatus, but with extremely small flowers. The leaves are coriaceous, shining, about 8 inches long by 1 broad. The panicle is a foot and a half long, and fully 8 inches in diameter. There is no difference whatever between this and the common forms of Saccolabium. The genus Carteretia must therefore be cancelled.

Saccolabium *fasciculatum ;* Lindl. sp. n., caule erecto distichè folioso, foliis ovatis amplexicaulibus obtusis obliquè emarginatis, paniculâ nudâ ramis simplicibus virgatis ad nodos apicem versus gemmas paleaceas floridas gerentibus, floribus e gemmis erumpentibus (parvis) ringentibus, sepalis lateralibus obovatis apiculatis supremo lineari oblongo concavo, petalis linearibus obtusis apice subdenticulatis, labello porrecto conico leviter arcuato, lobis lateralibus obtusis erectis intermediâ triangulari carnosâ, rostello elongato sigmoideo.

In foliage, this species has the habit of Epidendrum elongatum; but its inflorescence is quite peculiar. The stem, which is a foot and a half long, at its end becomes leafless, and divides into several rod-like branches, each a foot or so in length. Their branches are too leafless, and towards their extremities they bear, around the flowers, clusters of membranaceous bracts such as we find in certain species of Pleurothallis and Dendrobium. From amongst these bracts emerge the flowers, which are small and rather fleshy.—*New Guinea*, Mr. Hinds.

Jacca *pinnatifida*, Linn. *Feejee Islands*, Mr. Barclay.

Roxburghia sp., *Amboyna*, Mr. Barclay.

Dracœna sp., in a very imperfect state, *New Ireland*, Mr. Barclay.

Smilax without flowers, *New Ireland*, Mr. Barclay.

Flagellaria *Indica*, Linn. *New Ireland*, Mr. Barclay.

Cyperus *rotundus*, Linn. *Amboyna*, Mr. Barclay.

Fimbristylis *setacea*, sp. n., culmis cœspitosis setaceis basi vaginatis aphyllis glabris, spica solitaria erecta nuda lanceolata acuta, squamis oblongis acutiusculis dorso trinerviis glabris impunctatis, stylo bifido ciliato, achænio obovato-oblongo compresso niveo transversim undulato-rugoso. Diagnosis F. *acicularis*, Br. paucis verbis differt. Culmi tenuissimi 4-5-pollicares. Spicæ albidæ, iis F. *acuminatæ* multo graciliores. Stamina non vidi. *Amboyna*, Mr. Barclay.

Fimbristylis *pumila* sp. n., culmis cœspitosis filiformibus basi vaginatis aphyllis v. breviter unifoliatis glabris, spica solitaria erecta nuda oblongo-lineari, squamis oblongis acutis pallide fuscescentibus dorso uninerviis punctatis glabris subtriandris, stylo bifido nudo, achænio obovoideo punctato-tuberculoso albido. Culmis 2-3-pollicares, firmiores quam in F. *setacea*. Vagina sæpius in folium semi-pollicare producta. Spica parva, tenuis, pauciflora. Stamina sæpissime 3. *Amboyna*, Mr. Barclay.

Fimbristylis *communis*, Kunth., var. pumila, pilosa, semipedalis; et ejusdem var. elata, glabra, 2-3-pedalis. *Amboyna*, Mr. Barclay.

Scleria *Sumatrana*, Retz. *Amboyna*. Mr. Barclay.

Panicum *pilipes*, Nees ab Esenb. in Wight. Cat. n. 2343, probably already described under some other name, as it is not uncommon in collections from tropical Asia. *Friendly Islands*, Mr. Barclay.

Setaria *glauca*, Beauv. *Amboyna*, Mr. Barclay.

Cenchrus *anomoplexis*, Labill. *Friendly Islands*, Mr. Barclay.

Eleusine *Indica*, Linn. *Friendly Islands*, Mr. Barclay.

Centotheca *Lappacea*, Desv. *Friendly Islands*, Mr. Barclay.

Rottbœllia *cœlorhachis*, Forst. *Tanna*, Mr. Barclay.

Andropogon *Sorghum*, Brot. *Friendly Islands*, Mr. Barclay.

Andropogon sp., very imperfect, *Tanna*, Mr. Barclay.

Voyage to St. Thomas, St. Kitt's, Antigua, &c.

*Letter translated from the German, in the Regenburg Flora.**

The sea voyage affords me leisure for drawing up a slight report of my visit to the West India Islands of St. Thomas, Ste. Croix, St. Jean, St. Kitt's, and Antigua. My missionary labours consuming the greatest portion of my time, I have, of course, not much leisure for botany ; still something was done; my wife being, as usual, a true helpmate to me; and I shall feel happy to share with my friends, as far as my stock allows it, the plants that we have preserved.

After a somewhat stormy passage, it was naturally delightful to sail so close along the Islands of St. Kitt's, Nevis, and others, that we could distinguish their palm-trees : our happiness was still greater, when we dropped anchor, on the 18th December, 1840, in the port of St. Thomas. The fine and lofty mountains shone in superb verdure, the handsome and cheerful turf spread before us on three hills, and when stepping on shore, each flower and grass was new to me. Musk, which is an ornament to our green-houses, grew along the roadside as weeds. The Cocoa Palm lines the highways, and the Sugar-cane is substituted in the fields for our corn. Every thing was different, and yet hardly strange to

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Communicated by F. Scheer, Esq.

me; but I required time, to become domesticated in this new sphere.

The multitude of plants and flowers which greet one all at once, afford indescribable pleasures; it is as if plenty had been poured down here by nature. Judge how delighted we must have been on our first walk, to find a small hill, entirely covered with *Mimosa sensitiva,* prettily recoiling, as if frightened, at every step we made.

The many Cacti and Aloe create singular impressions. They are literally inserted into other plants and shrubs. An Opuntia, with red and yellow flowers, and prickles which will pierce through boots, is used for enclosures, as hawthorns with us. Of the Cerei some stretch out their arms so high, as to become trees; the lower stem is covered with something like a bark overgrown with lichens. I had fancied that such stems became gradually indurated, wood-like, and was, therefore, not a little surprised on probing them with a knife, to find them soft. The fruit of several Cacti is eatable, but tastes sweet and insipid. The Melo Cacti have a pretty appearance on rocks and walls; they are often larger than a man's head, topped with a fine red tuft.

The wild Pine-apple serves also for enclosures, its serrated leaves rendering it quite impervious. The common Aloe (Agave) is used for the same purpose, and I shall never forget the sensations experienced, on beholding, the first time, a long row of these in blossom. But I liked them still better dispersed singly on the hills, in a perfectly *free* state. When many are in flower, their blazing yellow blossoms look as if a stream of flames were poured out. I tired not with looking on these floral sovereigns; they have something about them at once elegant and grand. The scape, bearing perhaps five thousand flowers, is, at the base, about 4 inches in diameter, and rises to the height of 30 feet; when dead, being then in substance something like decayed wood, it is famous for lining insect-cases. It is preferable to cork, being softer, yet retaining the joins quite as firmly.

The Sugar-cane is the chief produce of all the islands which I visited, and occupies the place of our corn fields. I arrived just in time to secure some of the bloom, which I could not have done later. Coffee is hardly grown; I saw only one plantation at St. Jean. The cultivated coffee is of excellent quality, and succeeds well in stony moist places, which are here abundant; but labour is too high, and, therefore, coffee is generally imported. From the same cause, the common fruits of this country are less seen than one would expect.

The delicious Pine-apple succeeds every where, and requires little attention; a large extent of soil, on which it might be grown, lies waste; and it is not abundant on the Danish islands; only in St. Kitt's and Antigua we eat it frequently. The fruits belonging to the Citron family are not to be seen on St. Thomas and St. Jean, some disease having affected the trees, which will no longer flourish here. I saw small, crippled trees, cultivated with much trouble. In Ste. Croix they are, however, common. The limes, preferable even to lemons, waste on the ground; even oranges, and shaddocks as large as children's heads, were lying in masses under the trees. Cocoa-nuts are hardly eaten by any one but the negroes, the European inhabitants seeming to care altogether little for indigenous fruit. At dinner, the tables are covered with European dishes; boiled prunes and preserved fruit, from the old world, are placed before you, and little is seen of their own. Thus, man longs every where for that which comes from afar! I must still make mention of the Cabbage Palms. Of these trees there are magnificent avenues on Ste. Croix, looking like gorgeous rows of columns, with splendid leafy capitals. The whitish-green trunk swells out in the middle; the top of the shaft is green, and most elegantly shaped. I never saw these palms without pleasing emotions. Unluckily, we can only carry home recollections of this and many other vegetable treasures. The finest plants and flowers admit least of being dried; and I was often obliged to throw away, full of sadness, things on which I had bestowed much pains.

My attention was chiefly directed to Cryptogamia; but, at first, I met with disappointment, all the islands I visited, except St. Kitt's, being too dry. In early times the woods were cut down, and the hills are now covered with worthless jungle. The stones are every where overgrown with lichens, but mostly such as cannot be separated from them. This also holds good with those growing on the stems of trees. Of Mosses I found only a *Barbula*, on damp stones; a *Grimmia*, like *crispula*; a *Fissidens*, very similar to *viridulus*; and a *Bartramia*, something like *Marchica*; also an *Anthoceros* as yet unknown to me. *Ferns*, also, were less frequent than I had expected; with much exertion, I only could detect ten sorts; amongst them an *Acrostichum*, probably *aureum*, but remarkable on account of its size, grows bracket-like, similar to *Struthiopteris*, in some of the Lagunes, its fertile fronds in the middle, are 10 to 12 feet high. It covers large spaces, and forms extensive shrubberies. In Antigua, it grows in damp places, and beside streams, but not half so high.

But in St. Kitt's, my expectations in this respect were far exceeded by reality; and I will attempt to describe a few excursions which I made there into the splendid tropical regions.

On the 10th of June, a lofty mountain, named *New Brunswick*, on which there is the so called pond, supplying the whole island with water, was to be ascended. Two friends and a few negroes accompanied me. We went on horseback to a plantation called Boyd's Fountain, and there put on our travelling clothes; namely, thin white jackets, &c. Even here, beautiful ferns were to be seen on damp walls. Soon afterwards, the road became so steep, that the horses would go no further, and we sent them back to the plantation. The mountain now was quite alpine, and we climbed upwards, on a narrow ridge, with deep valleys on each side. Now only I got acquainted with tropical nature, and hardly could trust my eyes, when beholding *giant ferns* as large as palms, and Arum and Calla-like plants as big as Bananas. Ferns preponderated, and I hardly knew what to seize first. I had a negro with a basket, but it was soon full. I also found here a beautiful Machantia. Perspiration absolutely poured down my forehead; but as we ascended, the atmosphere became cooler and more European, and everything around us more and more moist. Musci and Jungermanniæ became abundant, and I almost leaped for joy at beholding in their own home old acquaintances, which I had hitherto only seen in pictures and herbariums. Even my companions were surprised, and observed, that by having their attention thus excited by me, they could not fail to acknowledge the beauties and wonders of nature. The trunks of the trees were covered with parasitical ferns; amongst which, some species of Hymenophyllum and Trichomanes were most elegantly conspicuous; between them were long pendant Jungermanniæ. Our negroes preceded us, cutting a road; but, at last, we were forced to make use of the bed of the stream for our way. In this the stones were not so much overgrown with moss as is usually the case with us. Thus we arrived at last at the pond, which is plainly a crater filled with water.

Here vegetation had so completely gained the supremacy, that the whole was overgrown with a carpet of shrubs, grass, ferns, and Lycopodia. Notwithstanding the warnings of my companions, I ventured as far upon these as time would allow me, because I knew from experience, that there was no danger of sinking in. The Lycopodium curvatum, occurring here frequently as high as four feet, is particularly elegant, having the appearance of a very small fir-tree. The surrounding heights are every where covered with the palm-like fern, and the cabbage-palm. Any one settling here, to clear the land, would collect great treasures. We took, standing, (it being too wet to sit down), a slight meal of bread, ham, and wine, to which the negroes added a few cabbage palms, cut down and prepared for the occasion.

It demands much self-denial to pass by so many botanical treasures; but time pressed, and our baskets were quite full. On our return, we had frequently to slide down the steep sides, thereby giving a pretty colouring to our *white* garments. It being late ere we quitted the mountains, some trusty negroes came to meet us, entertaining a fear that an accident might have happened to us. We changed our dresses at Boyd's Fountain plantation, refreshed ourselves with wine and water, and rode comfortably home. The ladies were not a little surprised at the state of our white dresses, and could not be easily convinced that they were less valuable than the plants.

On the 15th of June, we made a still more interesting tour up a mountain, called Mount Miseri, 4,000 feet high. It is said to derive its name from the circumstance of Columbus, on passing by this mountain in sailing by St. Kitt's, having called out, whilst pointing to a boil below his shoulder: "Mons miseri!"

We proceeded, in the morning, until we got to the steep part, where we left our horses. The somewhat cooler air and the shrubs and trees, similar in many cases to our own recalled home to my mind, only with this difference, that wherever I stretched out my hand, something new was to be got for my basket. As we ascended, Cryptogamia increased; ground and trees were covered with ferns, one of which was itself arborescent. At the crater on the top we all sat down, and enjoyed a prospect such as I had never before seen. In front of us, a rock towered boldly upwards, having withstood every volcanic eruption, as well as every attempt of man to ascend it. It was abundantly covered with mosses, towards which I looked with anxiously longing eyes. As a compensation, I found on the stone upon which I was seated, a beautiful, and to me yet unknown, Stereocaulon. Towards the left we looked down into the crater, with its splendid and mostly perpendicular walls of rocks, the borders being crowned by the proudly rising "*Lion's-head*," which only a few bold adventurers have dared to climb. The view of the island and sea is indescribably beautiful, both in outline and also on account of the splendid colouring, which gives to tropical countries such peculiar charms.

Having reposed and refreshed ourselves, we commenced our wanderings down into the steep crater. It took us about an hour to reach the clayey bottom, covered with grass. Only on the sides are some hills still smoking and covered with sulphur, and a few puddles of boiling water. We had to force our way through underwood of *Mertensia dichotoma* (?), and had then the happiness, besides other things, to find a very pretty fern, which I consider new.

It took us at least two hours to climb up out of the crater, and was very troublesome. We did not reach home before the dark of night; our negroes were heavily laden with botanical booty, and we highly satisfied with the rich enjoyments afforded us by nature. This excursion was the jewel of my voyage, and it will be ever delightful to my memory.

We proceeded from St. Kitt's, by steam, to Antigua. This island agrees in botanical character more with the Danish West India islands. In St. John's, we got on board a vessel loaded with sugar, on which we returned to Europe. Whilst writing this, we are on the Atlantic ocean, becalmed, and in want of water—a great want for me, to whom it is an indispensible necessary. But a kind God, who has so far helped us, will not now suffer us to perish. He has the winds in his hands, and can open the windows of the heavens to pour down rains and waters. He preserved our lives, when storms howled and waves raged. He cared for our health under the burning heat of the sun. He will surely carry us back to our beloved and our children, whom we left in our fatherland. (Written in July, 1841).

J. Christian Breutel.

Bethelsdorf, near Herrnhuth.

Notes on the Botany of H. M. *Discovery Ships, Erebus and Terror in the Antarctic Voyage; with some account of the Tussac Grass of the Falkland Islands, by* W. J. H.

(*Two Plates.*)

Since the days of the illustrious Cook, and of the distinguished men who accompanied that expedition, perhaps no voyage, undertaken for the purpose of scientific research, has ever excited so deep an interest in the public mind, or promised to yield such important results to navigation, and in the boundless fields of philosophical inquiry, as that of Captain James Clark Ross, in the South Polar regions, in H.M.S. "EREBUS and TERROR." The nature of the service renders it imperative that the main body of the information collected, and discoveries brought to light during this protracted voyage, should not be generally divulged till the return of the expedition; but through the medium of the *Admiralty*, the *Royal Society*, and the *Royal Geographical Society*, and the *British Association for the Advancement of Science*, and I may add of the daily Journals, several deeply interesting announcements have been already laid before the public, and it is now my agreeable task, with the sanction of the Admiralty, to make known to the botanical world some of the more important services rendered to that particular branch of science by the naturalists of this voyage.

What, it may be asked, can be expected in the way of Botany, in those dreary regions of the extreme south, where the rigour of the climate and the striking diminution of vegetation, in latitudes corresponding with those of the northern hemisphere, where vegetation is still copious, appear to offer an effectual barrier to the very existence of plants? Vegetable life is scanty, it is true, and the gallant commander of this expedition has pushed his researches into latitudes where every kind, even of aquatic vegetation, has ceased to exist, which is not the case in the north. There, far as human perseverance has penetrated, the same officer performing the enterprize, plants have never failed. But the object of the present voyage was not solely to prosecute investigations in the extreme South Polar Regions. Magnetic observations had to be taken, and astronomical instruments fixed, in various localities in the temperate and even tropical portions of our globe, and various islands and continents have thus been visited where Flora is arrayed in a great diversity of forms, and where the naturalists of the ships could not fail to carry on their pursuits with pleasure and advantage.

It is, nevertheless, in those islands of the southern hemisphere, which encircle the South Pole, at various and generally very remote distances, of which the Straits of Magelhaens and Kerguelen's Island may be considered the northern limit, that the productions, though comparatively few, are the most remarkable, and from their isolated position, and geographical distribution may be studied with such advantages as no other parts of the world can offer. And, happily, we know that this important branch of Natural History has particularly engaged the attention of the officers of the "Erebus and Terror," and the results cannot fail to be important to that branch of science in which Humboldt has led the way.

It is not our object, or wish, on the present occasion, to notice, in a detailed manner, any of the botanical novelties discovered in this voyage; but rather to satisfy the public mind, that in a department of Natural History, which could only hold a secondary place in the great undertaking, much may be expected to appear, of high interest, when the voyage shall have been completed.

The following observations are wholly derived from the information given by my son, Dr. J. D. Hooker, Assistant Surgeon in H.M.S. "Erebus," the officer on whom the botanical researches expressly devolved. It is not for a parent to say how well he has performed that task: but it were injustice to withhold the fact, that but for the friendly aid afforded by the other officers of the expedition, and by Capt. Ross in particular, the botanical collections, the copious drawings made from recent specimens, and the knowledge consequently acquired, would all be very limited, compared with what they actually are. A voyage of this kind is, in one respect, entirely different from inland travels; the scanty accommodation on board vessels of this description, where almost every inch of space is occupied by something connected with the chief objects of the expedition, being quite unlike what the naturalist meets with on shore: still, these difficulties have been, in a great measure, obviated by the kind consideration of the commander, who has granted every facility possible for the advancement of each individual department of science, by his own personal exertions, and the free use of his cabin. The collections which have already arrived bear ample testimony to the correctness of the statement.

We shall pass slightly over the countries whose vegetable productions are familiar to us, to dwell the longer on the more interesting and less known southern regions.

Her Majesty's Discovery Ships, "Erebus and Terror," quitted the Medway on the 25th of September 1839, and proceeded to Madeira. To the chief botanist this was a new country, and though the season was mid-winter, he found the gardens rich with *Bananas, Vines, Daturas, Fuchsias, China-roses, Hibiscus and Heliotrope*, growing in the greatest luxuriance. A party was quickly formed to visit the well-known *Curral*, one of the most romantic spots in the island, about 3,500 feet above the level of the ocean, and where, at a favourable season, many good plants might be found; but now, in these elevated situations, little could be seen but a few *Mosses* and *Lichens*, with the withered remains of *Semperviva*, and other succulent genera.

The stay at Ténériffe, where the ships did not even cast anchor, was so brief as scarcely to allow of a dozen plants being gathered, besides a few curious *Algæ*. All was dried up and flowerless. From Ténériffe they shaped their course to the Cape de Verds; and here, could some weeks have been devoted to the mountains, an extensive harvest might have been reaped. The several islands of this group present entirely different features. San Antonio is covered with wood. Sal, is a salt plain: Fogo, a stupendous active volcano, its reputed height 7,000 feet. San Jago resembles a desert, with a fertile and mountainous interior, and as this was the only island touched at, and Porto Praya, its capital being 12 miles from the rich central part, hardly any thing could here be accomplished in the way of botany. From the little that was seen of the island, the productions of its plain seem to resemble the vegetation of the great Sahara desert; of its valleys that of the tropics; while the mountains presented plants similar to what exist in the south of Europe, or the range of the Atlas; one hundred and ten species were secured in a good state, and about one hundred more were seen, but unworthy of being gathered. As the botany of the Cape de Verds is little known, and supposed to be peculiarly interesting, it may be well to state the opinion entertained by one of the officers, after remaining some days upon the coast, as to the best mode of proceeding in a climate, which has the character of being extremely unhealthy. A temperate and judicious traveller, he observes, might, in two months' diligent research, make a fine botanical collection in the country, by proceeding to the hills immediately after the rainy season, where he could employ his time in perfect safety, if he protects his person with a light parasol, and avoids over-fatiguing himself. Porto Praya ought to be his landing-place, and thence he might proceed to the town of San Domingo. The inhabitants of the country-houses, chiefly Portuguese, are most hospitable; food is abundant, and ponies, though bad, are very cheap. "No idea, whatever, of the interior, can be possibly obtained by the coast scenery, nor, for many miles round Porto Praya; for there is hardly a tree to be seen; grass and herbage are totally withered and dry; the very stones black and scorching from the heat of the sun. The thermometer generally rose to 86° and even higher, in the shade; and during the whole day, while on our excursions, we found it impossible to obtain the means of allaying our thirst, except by applying to the poor negroes, (the population consisting of free negroes and a few Portuguese,) and they were invariably attentive and kind, offering oranges and Agua-ardiente, or assisting to extract the thorns and spines, that, piercing through the trowsers and stockings, penetrated the flesh. Among the more interesting trees, a solitary *Baobab (Adansonia digitata,* see Botanical Magazine, Tab. 2791 and 2792) was observed; not more than 60 feet high; but with a trunk 38* feet in circumference.

From Porto Praya the direction of the vessels was easterly to the desolate rocks of St. Paul, lying a little north of the equator, and admirably described by Darwin; they are few in number, about 60 feet high, and constantly washed by a tremendous surf. One boat was sent on shore, and another was intended to be despatched the following day with the botanist; but the difficulty and danger of landing were found so great, that the captain wisely declined allowing the attempt to be made again. A *Sea-weed* inhabits the marine edge, but it does not appear that any plant, even a *Lichen*, is to be seen on the rocks themselves.

Still steering westward, there existed at one time, an idea of landing on the Brazilian coasts; but the course was then southerly till they made the little solitary island of Trinidad in S. lat. 20°. This exhibited small patches of vegetation on the weather-side, which is flat, while the lee is very rocky and steep; so that the only spot where a landing could be risked was a rock, cut off, unfortunately, from the rest of the island by inaccessible precipices. Nought but a *Fern* and a *Grass*, and one or two species of *Cyperus*, were to be obtained. Near the summit of the highest hills and under some cliffs, about 2000 feet high, were descried small groves of trees,—apparently, for it was impossible to judge correctly, *Tree-Ferns;* while all along the shore lay the remains of prostrate, barked, white trunks, no living ones being discernible even in such places, not even with the aid of the telescope. After an ineffectual endeavour, by landing at another point, to reach the higher portions of the island in search of this grove of trees, the great intervening distance and the ruggedness of the country compelled them to turn back, nor was it till the signal was given, that the party reluctantly went on board. After a voyage, rendered very tedious by beating against the trade winds, the expedition reached St. Helena on the 1st of February, 1840.

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* Adanson speaks of one in Senegal, which measured 30 feet in the *diameter* of its trunk, and which he estimated to be five thousand years old!—"The oldest organic monument," says Humboldt, "of our planet."

It must be a source of great regret to every botanist to know that this insulated rock, originally inhabited by a most peculiar vegetation, should have had its productions so completely changed by the destruction occasioned by cattle, and by the introduction of European and other plants, especially forest-trees, that these now take place of the native growth. On this subject, much valuable information will, no doubt, be laid before the public. In the gardens of St. Helena there exists the strangest mixture of Tropical, European, and even Australian and Chinese vegetation, that can be conceived. *Acacias, Casuarinas, Pittospora, Billardieras, Dammaras*, from New Zealand, and *Eucalypti* from New Holland, flourish along with the *Scotch Fir, Plane, Peach, Apple, Pear,* and *Plum;* and there are *Scitamineæ* from the East Indies, and *Aroideæ*, with *Pine-Apples, Roses, Hydrangeas, Camellias* and *Tea plants.* An excursion to Diana's Peak, and other places, with diligent search on the way, afforded the means of making a tolerable collection of such native vegetation as yet lingers on the islands.

On their way to the Cape, and within a few miles of it, the ships fell in with great masses of floating seaweed, all of one kind, a *Laminaria*, (*L. buccinalis?*) which had been torn up through the action of some great submarine force; and in several instances they counted, proceeding from one branching root, 6 great stems, the longest of which measured 24 feet, erect, smooth, and rather club-shaped, broadest above and fistulose; while from the summit of this again sprung the palmated blade or lamina, adding 6-8 feet to the whole length. The quantity of parasitic and marine animals found among this seaweed was quite extraordinary, and added greatly to the collections. One plant alone afforded 4 parasitic *Algæ,* and 30 animals of different kinds.

The near approach to the Cape of Good Hope called up feelings in the mind of the young naturalist, which are best expressed in his own words, and can be only understood by one who possesses a keen relish for the wonders and beauties of Nature, and takes a pleasure in imparting to others a share of the knowledge and of the objects which he has himself attained by long and distant travel. The productions of the Cape were, however, not wholly unknown to the writer, for the frequent botanical communications of one dear and valued friend,* the discoverer of *Wardia* and other South African novelties, had rendered him familiar with many of the vegetable productions of the colony, and, as it were, familiarized him with the localities where they grow. "I have heard Naturalists," says our botanist, "complain of the tedium which attaches to a sea-voyage; but such persons cannot be *true* naturalists, or must be suffering from sea-sickness, a cause from which I have never suffered for an hour. I do not mean to say that I should not have been better employed and happier if studying botany at home, but I assure you, that my weeks fly away fast; though, from my being a slow worker, I have not much to show; and unaccountable as it may appear to you, when we draw near shore, I feel quite thrown out of my usual routine of occupation. I will own, however, that once my foot has touched *terra firma,* there is a sort of magic connected with it, that makes me grievously loth to quit it for sea again. There are those peculiar emotions consequent on visiting new countries for the first time, which are perfectly indescribable. I never felt as I did when drawing near Madeira, and probably never shall again. Every knot that the ship approached, seemed to call up new subjects of inquiry, and it still is the same with each new land and even barren rock. So it was when we made the Cape. On descrying Table Mountain, I could have sate (and did sit) for hours, wondering whether this knoll was covered with *Heaths* or *Rutaceæ;* if that rill produced the *Wardia,* or such a rock the *Andræa ;* where were Ludwigsberg and Wynberg, the *Tree Ferns,* and all those objects which the mind associated with our mutual pursuits and friends at home. No idea recurs so often, or is so delightfully pursued, as that of telling my relations of all that I have seen: never do I view a new prospect but I think what pleasure it will give to scan it o'er again, as it were, in their society; mapping out the spots where my specimens have been gathered, painting the scenery to one, and spinning to another the yarns of incidents that have befallen during my excursions, while my untravelled friends will look upon me as 'the monkey that has seen the world.'"

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* The Hon. W. H. Harvey, late Colonial Treasurer at the Cape of Good Hope; but at that time absent on account of ill-health

The botany of the Cape itself and of Table Mountain, which was the utmost extent of the young officer's rambles, is too well known to render it necessary to dwell upon the subject here, and we are approaching a country, of scanty vegetation, indeed, but replete with interest to the philosophical inquirer, from its size, 200 leagues in circuit, its position, (N. lat. 49° 20′, E. long. 69° 30′) so widely severed from other lands, and its most peculiar, though limited Flora, namely, Kerguelen's Island, or Desolation Island. We are not aware that any thing was previously known of its vegetable productions, save what is said respecting them in Captain Cook's third voyage, where it is observed, "Mr. Anderson, my surgeon, who had studied Natural History, lost no opportunity, during the short time we lay at Christmas Harbour, of searching the country in every direction. I insert his observations in his own words:—'Perhaps no place hitherto discovered in either hemisphere, under the same parallel of latitude, affords so scanty a field for the naturalist as this barren spot. The verdure appears, when at a little distance from the shore, as if it would promise some herbage, but in this we were deceived. For, on landing, we found that this lively colour was occasioned only by one small plant, not much unlike a *Saxifrage*, which grows in spreading tufts to a considerable height up the hills. It forms a surface of a pretty large texture, and grows on a kind of rotten turf, into which one sinks a foot or two at every step. This turf, dried, might, in case of necessity, serve for fuel, and is the only thing we met with here which could possibly be applied to this use.

"'There is another plant, plentifully scattered about the boggy declivities; it grows to near the height of 2 feet, and resembles a small cabbage when it has shot into seed. The leaves about the root are numerous, large, and rounded, narrowest at the base, and ending in a small point. Those on the stems are much smaller, oblong, and pointed. The stalks, often 3 or 4, all spring separately from the root, and run into long cylindrical heads, composed of small flowers. This plant has not only the appearance, but the watery acrid taste of the antiscorbutic plants, yet differing so materially from that whole tribe, that we regarded it as a production entirely peculiar to the place. We ate it frequently raw, and found it almost like the *New Zealand Scurvy-grass*. But it seemed to acquire a rank flavour by being boiled: which, however, some of our people did not perceive, and esteemed it good. If it could be introduced into our kitchen-gardens, it would probably so improve by cultivation as to become an excellent herb. At this time none of its seeds were ripe enough to be gathered and brought home to try the experiment. Two other small plants were found near the brooks and boggy places, and eaten as sallad; the one almost like *garden-cress*, and very fiery, the other quite mild. This last, though small, is in itself a curiosity; having not only male and female, but what the botanists call *androgynous* plants.

"'A coarse *grass*, which we cut down for the cattle, grows pretty plentifully in a few small spots about the sides of the harbour, with a small sort, which is rarer; and upon the flat ground a sort of *goose-grass*, and another small production much like it. In short, the whole catalogue of species does not exceed sixteen or eighteen, including some *Mosses* and a beautiful *lichen*, which inhabits the rocks higher up than any other, nor is there the least approach to a *shrub* in the whole country.' "

But to return to our voyagers. The "Erebus and Terror," having quitted the Cape of Good Hope on the 6th of April, 1840, spent from the 12th to the 17th of that month in crossing the Agulhas Bank, which afforded ample scientific occupation, in its immense masses of *Macrocystis pyrifera*,* (that enormous seaweed, supposed to be the longest vegetable production in the world, Sir Joseph Banks having judged that, in the Great Pacific Ocean, it attains an extent of 1,500 yards), and in the great variety of marine animals which this *Alga* harbored. On the 21st they passed to the southward of Marion Island, formed of flat terraces of volcanic rock, with high, cone-shaped, often red mountains, towering to a considerable elevation. Colonies of Penguins were on all the shores. The "Erebus" was hove to, with the intention of landing next morning, and they began dredging in 96 fathoms, between Marion and Prince Edward's Islands.† The dredge came up, filled with white coral and thirty-seven distinct species of marine animals. Next morning, however, the voyagers found themselves driven so far to leeward of the island, that it would have required too long a time to beat back; thus landing was rendered impracticable. Early on the 26th, after encountering some very severe weather, the westernmost of the Crozet group was descried, and on the 1st of May they hove-to at Possession Island; but the wind was too strong (it must be remembered that the season was mid-winter in these latitudes) to allow of the attempt being made without danger of the ships being blown off, and having to beat up again, which must have occasioned many days' delay. The Island, indeed, seemed perfectly barren of aught but a few coarse tufts of *grass*, and a *moss*-like substance that clothed the rocks and vallies—all was volcanic.

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* This gigantic seaweed is found throughout the Great Pacific Ocean, and in the Atlantic from the equator to the 45th degree south latitude: but its length may perhaps be greatly over-estimated, judging by an observation made by M. Gaudichaud, the botanist to Freycinet's voyage. He says, that "when near Cape Horn and the Falkland Islands, the ship steered through wide banks of *Macrocystis pyrifera*. Two-thirds of each plant, obeying the laws of specific gravity, floated in a perpendicular position, not however attached to the bottom of the ocean: and this upright position has perhaps induced the belief that the extraordinary seaweed in question grew at an immeasurable distance from the surface."

† In the excellent Admiralty Chart of the South Pole all the places here mentioned may be seen accurately laid down, together with the tracks of H.M. Discovery Ships in 1840, 41, and 42, till their arrival at the Falklands.

On the 6th of May, the long-wished for Island of Desolation, or Kerguelen's Island, was descried, and the ships first made Bligh's Cap, to the westward of it; but the weather became so thick that it was necessary to keep off from the direction of the land, for evening was approaching. On the 8th, they were blown eighteen miles to leeward of Christmas Harbour; but before night, they retraced their way, and hove-to off the mouth; when again, heavy gales coming on drifted them in two days, one hundred and fifty miles from the desired haven, and the 12th of May arrived ere they found themselves at anchor in the outer bay of this singular harbour, whence they had to warp up the head of it. A faithful representation of one side of the scene around them, which was most remarkable, is given in Cook's third voyage. The outer basin is about two miles in diameter, bounded by lofty cliffs of black rock, from which the land rises in successive ledges, till it terminates in table-topped or peaked mountains, 1,500 to 2,000 feet high; and the effect of this was the more remarkable, from the nearly equal distribution of rock, snow, and vegetation. "Often as I have sate," says the botanist, "on the summit of the cliffs which hem in this iron-bound bay, it was impossible to grow tired of watching the fearful surf, continually roaring and lashing against a mile of precipices, surmounted by high, snow-capped mountains. Whenever a gale blows from the south-west, which is continually the case at this season of the year, the wind is concentrated by the hills of this bay, and carried with redoubled violence into Christmas Harbour, where it spends its terrific fury, rendering all our anchors and cables barely available for securing the ship, and sometimes forbidding, for many days, any communication with the shore.

"The first plants to be seen, on landing, are, of course, *Sea-weeds* and *Lichens* on all the rocks; then come a long *Grass*, an *Agrostis*, a little *Ranunculus*, and more abundantly than either, a *Composite* plant, forming small turfy slopes and ledges, of a bright green hue, among a mass of black bog-earth, covered with a *Callitriche* and *Portulaceous* plant. Conspicuous amongst all these, is "*the* CABBAGE," throwing out its thick round roots, 1-2 inches diameter and exposed from a few inches to 2 or 3 feet, along the ground, bearing at its extremity, large cabbages, sometimes 18 inches across, of obconical or spathulate, rounded, concave, green coriaceous leaves, enfolding a white heart, which eats like coarse, tough mustard and cress. From the sides of the heads, issues one, or more, long leafy stems, bearing such spikes of seed-vessels as my specimens, sent to the Admiralty, will show. The root tastes like *Horse-radish*, the seeds like those of *Cress;* but the leaves are the grand fresh provision, and were so extremely relished by the sailors, that during the whole of our sojourn in that barren land, they were always boiled with the ship's company's beef, pork, or pea-soup. They taste to me very like very stale cabbage, with a most disagreeable essential oil, which resides in cavities in the parenchyme of the leaves, and which are very conspicuous on making a transverse section of the heads of leaves. This oil gives to this vegetable a curious anti-heartburn property. Altogether, I consider this cabbage a most invaluable anti-scorbutic, which few persons do not like, or cannot bring themselves to eat. Near the sea it grows in great abundance, and ascends to the tops of the hills, 1,500 feet high, where it is small and hairy, but retains all its properties.

"The next most remarkable plant is a little tufted *Umbelliferous* one. It forms long brown patches on the shores, the banks and rocks; sometimes covering many acres of land with deep cushions, on which you may, from their elasticity, lie with comfort, though, at other times, you sink up to the middle. The tap-roots of old tufts strike many feet into the soil which its own self has formed (owing to its property of shooting annually upwards) from the withered tops of the previous years' shoots, like *Bryum Ludwigii.* The flowers are scarce and very inconspicuous. It has no smell, nor any essential or other oil; but is remarkable as one of a group of *Umbelliferæ,* peculiar, I believe, to the southern hemisphere, and there only found in exceedingly alpine or antarctic regions.*

An *Acæna* is the next plant of frequent occurrence, growing in bogs, or creeping over the dried soil, like *Comarum* at home, of which it put me much in mind. All the above-mentioned species are nearly confined to the vicinity of the sea; the *Cabbage* and *Halorageous* species alone being found at any height above its level, and all are frequently exposed to the salt surf, apparently with impunity.

" At an elevation of about 300 feet above the sea, and also near it, I observed a small tufted *Silene* (?), two *Grasses,* one of them a little *Poa,* and the other a most beautiful (*Aira?*), with remote horizontal spikelets, on long peduncles; the latter is rather scarce, and certainly is the most delicate and pretty plant on the island, it grows in marshy places. On the banks of two small lakes, between Christmas Harbour and North-west Bay, a little *Juncus* occurs, and in the lakes a most remarkable plant, which resembles *Subularia aquatica,* forming green patches, a foot or 2 feet beneath the surface of the water, on a loose muddy bottom. There it flowers; the close imbrication of the calycine sequents and those of the corolla, protecting its stamens from the influence of the fluid. Each germen contains a small bubble of air, generated, of course, within the ovary. Winter seems to be its season of inflorescence; for I found it in blossom after a long search, under a coating, 2 inches thick, of ice. So far as I have hitherto examined this plant, it seems to differ in character from any Natural Order; though, like *Limosella,* it may be nearly allied to *Scrophularinæ,* having also some of the peculiarities of *Lentibularinæ* and *Primulaceæ.*

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* The plant here alluded to is probably a *Bolax,* and allied to, though different from the remarkable "*Balsam Bog.*" (*Bolax glebaria*), of the Falkland Islands.—Ed.

"The seasons are evidently late on this island, and the winter comparatively mild. We have had frequent hail and snow-storms, but these seldom lasted more than a few hours on the low ground, the sun, wind, and rain soon removing the snow, with apparently slight injury to vegetation. There was but one strictly aquatic plant, and one entirely confined to dry land, all the rest, so far as I could discover, preferring a moist and peaty soil. Of *Jungermanniæ* and *Mosses* there was a considerable number of species, all belonging to alpine or arctic forms; especially the genus *Andræa,* and another, approaching *Scouleria* in characters. The *Lichens* appear to form a much larger component part of the vegetation at Kerguelen's Island than is the case, comparatively, in other parts of the world; especially when it is remembered that, from the absence of trees, there can be no parasitic species. The rocks, from the water's edge to the summit of the hills, are apparently painted with them; their fronds, in general, adhering so closely to the stones, that it is only with difficulty they can be detached; in other cases, they seem to form part of the rock, which, from its excessive toughness and hardness, almost defies any attempt to procure such specimens as shall be at all satisfactory. At the tops of the hills they assume the appearance of miniature forests on the black rocks, and nothing can be prettier than the large species, with broad black *apothecia,* which covers all the stones at an elevation of from 1,000 to 1,500 feet. A smaller kind, like a little oak-tree, grows in spreading tufts (also upon stones), and is of a delicate lilac colour. Near the sea, the plants of this tribe are generally more coriaceous; especially a yellow one, that there forms bright patches on the cliffs. In the caves, also, on the coast, a light red species is so abundant as to tinge such situations with that hue, and many other sorts inhabit the rocks and their crevices.

"*Sea-weeds* are in enormous profusion; especially two large species, the *Macrocystis pyrifera* and *Laminaria radiata* (?). The former forms a broad green belt to the whole island (so far as seen), of 20 or 30 yards, within 20 feet or so from the shore. Here the branches are so entangled, that it is sometimes impossible to pull a boat through the mass; and should any accident occur outside this girdle of sea-weed, its presence would form an insurmountable obstacle to the best swimmer's ever reaching land. On the beach, the effect of the surf, beating it up and down, affords a very pretty appearance, but not so striking as is the view, from a slight elevation, of the Bay, with this olive-green band running round it. The sea-birds, when on the water, always fly over or dive under it, to re-appear on the other side. The *Laminaria* hangs down from every rock within reach of the tide; its digitate fronds, of a very thick coriaceous consistence and of great weight, are perpetually in movement from the lashing of the surf, and yet, thanks to their sliminess and strength, always uninjured. It protects thousands of *Limpets*, that would otherwise be exposed to the attacks of the gulls and other sea-birds. To collect our food of *Patellæ* was often hard labour, as we had to remove the tough and heavy masses of this weed to get at them."

Such were the first impressions, made upon the botanist, by the vegetation of Kerguelen's Island, which a two and a half months' stay gave pretty good opportunities of investigating; and the specimens sent home to the Admiralty testify that the time was not idly spent. That it should have been practicable to have gathered them, with flower and fruit in the very middle of winter, shows a great peculiarity in the climate. The latitude of this island, in the Southern Hemisphere, is as nearly as possible the same as that of our Channel Islands in the Northern ; and these, though far more limited in extent, produce, as stated by Mr. Babington, about eight hundred and forty species of *phænogamous* plants: whereas, in Kerguelen's Island, though the Flora was doubled by the researches of the "Erebus and Terror," the number of species does not exceed thirty-two, while the proportion of *Cryptogamic* plants is very great ; from which circumstance a very rigorous climate might be inferred. Such is not, however, the case : the winters, though stormy, are not so severe as to destroy the power of vegetation, or even materially to retard inflorescence. The paucity of plants must be accounted for from other causes.

We have reason to know that the peculiarities of soil, climate, volcanic action, &c. of this remarkable spot, as affecting its vegetable productions, are fully discussed in the journal of the botanist of this expedition, and some highly interesting results are deduced. We have no desire to anticipate that information, but are unwilling to withhold the following remarkable fact. "Cook visited this island in December, the very height of summer, when he met with only eighteen species of plants (as before stated) including *Cryptogamia*: of these he mentions five flowering plants in blossom. Of these five, I have, in May, gathered three, abundantly in flower, and two others, the *Cabbage*, and, I suppose, the *Callitrichoid* plant, just running into seed. Of these five again, two remained in bloom till July 20th, and none but the *Cabbage* had, till that time, fully shed its seed. Hence it would appear that few of the vegetables had performed their most important function, before the middle of winter." Winter botanizing in these antarctic regions, is, however, no sinecure, as the following extract will show.

"During my stay at Kerguelen's Island, I devoted all my time to collecting everything in the botanical way. The Captain kindly took off all restriction, permitting me to go on shore whenever I liked. My rambles were generally solitary, through the wildest country I ever beheld. The hills were always covered with frozen snow, and many of my best *Lichens* and *Mosses* were obtained by hammering at the icy tufts, or sitting on them till they thawed. The days were so short, and the country so high, snowy and barren, that I never could go to any great distance from the harbour, though I several times tried for it, by starting before daylight. As far as I proceeded, the vegetation did not differ from that of the Bays. A boating excursion was undertaken to explore to the southward of the island. I volunteered to accompany it, but was advised to wait for a second, and my superior officer, the surgeon, went. The party returned after some days, without having accomplished anything; the officer who led them found it impracticable for loaded men to travel by land, over rocks, round bays, and through snow-drifts; and when they took to the boat, the furious gales almost drove them out to sea. I went several boating excursions, and on one was dismasted and nearly swamped, so Capt. Ross would allow no more to be sent. Two *Lycopodia*, (one, a splendid species,) and a *Fern*, were on this occasion added by Mr. M'Cormick to my collections."

Coal and *fossil-wood* also abound in this most singular country, the latter was found lying in immense trunks, bedded in the solid basaltic rock!

The botanical productions of this large island may be thus summed up. There were gathered in all, about one hundred and thirty plants, and in the following proportion. "One *Fungus*, one *Chara*, thirty-eight species of *Alga*, and thirty of *Lichens*, ten of *Conferva*, one *Marchantia*, and ten *Jungermanniæ*, twenty-three *Mosses*, two *Lycopodia*, and a single *Fern*, five *Grasses*, and one *Juncus*.—One species in each of the following Natural Orders,—*Amaranthaceæ ? Cruciferæ*, *Ranunculaceæ*, *Compositæ*, *Portulaceæ*, *Rubiaceæ*, *Halorageæ*, *Umbelliferæ*, *Rosaceæ*, and *Caryophylleæ ?* Of two plants it was not possible to define the affinities.

I did my best to collect every thing that Kerguelen's Island afforded, not neglecting the most insignificant plant, often walking on the beach, gathering sea-weeds, my feet in the water, and wet to the skin with the dashing surf; I left not a hole unsearched, or stone unturned, and on those days when violent gales and snow-storms forbade all communication with the shore, I spent my time, and happily, too, in drawing, making analyses, and describing the specimens which I had brought on board. There is some danger, however, that inaccuracies may have crept into my work, for the rolling of the ship often obliged me to hold on, while thus employed, and to have my microscope lashed to the table, which renders dissection, under the glass, peculiarly difficult."

A *Ward's case*,* was brought away, filled with all the plants that could be found, all dug up and packed by the same active pair of hands as made the above mentioned drawings and descriptions. The Captain had kindly harboured this box in his cabin during the continual foul weather; but, unfortunately, just before reaching the next port, (Hobarton, Van Dieman's Island,) a fine day induced him to set the plants on deck, when a sudden tempest ensued, which not only blew the ships off the land, but did the valued case considerable damage.

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* The dreadful weather which the ships encountered in the inhospitable Antarctic Regions was highly unfavourable to the preservation of living plants; which it has been most earnestly the wish of the Commander to send to the Royal Botanic Gardens of Kew. With difficulty the *Kerguelen's Island Cabbage* was kept alive till the expedition reached Van Dieman's Island, when it was prudently planted in the Governor's garden, and soon sprouted. Seeds were transmitted to England, but though treated with the greatest care, and tried in several places, they showed no symptoms of germinating, though they looked good to the eye. Perhaps they were heated in passing through the Tropics; for other seeds, carried on by the officers, and kept for twelve months, vegetated on being set at the Falkland Islands; but again, these growing plants did not survive the voyage to England. There is no plant that would have given us greater pleasure to have introduced to our Gardens, for, by cultivation, there is reason to believe it will prove a valuable esculent. Farther, it belongs to a perfectly new genus of *Cruciferæ*, which Mr. Anderson, the Surgeon and Botanist in Capt. Cook's third voyage, designed (according to his *MSS.* deposited in the British Museum,) to have dedicated to Sir John Pringle, President of the Royal Society, and an eminent physician of the day.

Van Dieman's Island, from its vast extent, presents a wide field for the naturalist, and though Labillardière, Brown and Cunningham have laboured there, an ample share yet remains for future investigators. But as our object is mainly with Antarctic vegetation, we shall merely observe that what with the collections of the "Erebus and Terror," and those made by the unwearied exertions of Ronald Gunn, Esq., during many years, and placed at our disposal, there exist in this country ample materials for a Flora of that most interesting colony, such we trust as will form a part of the publication of this extended scientific voyage.

Dreadful weather, had, however, to be endured, between the 30th of July, when the ships quitted Kerguelen's Island, and the 16th of August, when the river Derwent received them. They had ran a thousand miles a week for three successive weeks, and were just in sight of Van Dieman's Island, when that gale, which did so much injury to the plants in the Ward's case, came on and drove them out to sea again, carrying one poor fellow overboard, and often sweeping the decks fore and aft. Happily the "Erebus" proved herself a most admirable sea-boat, riding like a bird on the waves, and when struck and washed by the great seas that broke over her, only staggering a little, till a port was knocked out, by which the immense body of water was suffered to escape.

Nearly three months were spent in Van Dieman's Island, and on the 12th November, 1840, the "*Erebus* and *Terror*" sailed down the Derwent, on their way to the extreme southern regions of our globe, amidst the enthusiastic cheers of the people of Hobarton, and accompanied for 30 miles by his Excellency, Sir John Franklin, of whom it need hardly be said that he has taken the deepest interest in the success of the voyage, and, assisted by the inhabitants generally, rendered our countrymen's stay in that colony peculiarly agreeable. On this memorable cruize, one of the grand objects of the expedition was fully accomplished, that of ascertaining the precise bearing of the South Magnetic Pole, and though it could not be supposed that such a voyage should be rich in vegetable productions, and although these were almost wholly derived from two islands; yet, their character is highly interesting. Our bold voyagers penetrated as far as 78° S. latitude, 7 degrees farther than Capt. Cook was able to accomplish, and nearly 4 degrees beyond the no less enterprising Weddell; they discovered, and ran along a vast extent of new continent, covered with everlasting snow, yet presenting to the view mountains of vast magnitude, from 9, to 12,000 feet in elevation, and one of them an active volcano!

On the 20th of November, eight days after quitting the Derwent, and in S. lat. 51° long. 166°, the ships reached Lord Auckland's Islands, where they remained till the 12th of December. This gave ample time for botanical investigations, and the opportunity was not wasted. About one hundred and twenty species of plants were added to the Herbarium (exclusive of *Algæ,*) and most copious notes and drawings were made from the recent specimens, together with minute observations on their distribution according to altitude, &c. Some remarkable genera grow at Lord Auckland's Islands, and two *Ferns,* which, from their caulescent stems, though they are small compared with the tropical *Tree-ferns,* may almost be called arborescent. Among the *Mosses,* are three undescribed species of *Andræa,* a fine *Conostomum, Bartramia,* two *Hookeriæ, &c.* A bird's eye view of the principal island presents about an equal distribution of wood, shrub and pasture-land; but with the mountains nowhere rising to such a height as to be destitute of grass to their very summits.

On landing, what may be considered the maritime zone, extending from the beach to the border of the woods, a very narrow belt, afforded *Ranunculus, Cardamine, Stellaria,* two *Acænæ, Portulaca, Lobeliacea, Callitrichea, Bulliarda?* and three *Compositæ,* two of which are also found on the hill-tops, *Gentiana, Myosotis, Polygonea, Veronica, Plantago, Amarantha-*

cea, Poa, Urtica, Pteris, Stegania, and two *Orthotricha.* The woody zone almost immediately commences, and contains *Myrtaceæ, Araliaceæ, Coprosma, Ozothamnus, Epacridea, Veronica,* two *Orchideæ, Carex,* and a nearly allied genus, two *Aspidia* with an arborescent caudex, two *Asplenia, Grammitis, Polypodium,* with many *Mosses* and *Jungermanniæ,* occupying the trunks of trees, and coating the earth in dense tufts, insinuating themselves into every vacant space and crevice, and in their decay, together with the fallen foliage of *Dicotyledonous* plants, forming a rich damp vegetable humus. It is hard to say, in this zone, whether the trunks of trees, the *Ferns,* or the plants of the lower Orders, occupy the greatest space in the forest. The most arborescent kinds are the *Veronica,* the *Araliaceous* plant, the *Myrtaceous* and the *Epacrideous,* and these are often so dense as to exclude the sun's rays from the ground. The predominance of *Ferns* extends for about 300 yards from the beach.

Next to the trees comes a shrubby belt, not indeed clearly defined, for it contains many of the trees of the lower region, (the arborescent *Veronica,* however, wholly excluded) though in stunted forms, mixed with a curious *Schizæa,* the *Coprosma* of the higher levels, a large *Lycopodium,* a blue-flowered *Veronica,* &c. This bushy region contains vacant spaces of black, almost naked earth, in which are imbedded the dead roots of existing species of trees. Why the soil in such situations should remain thus bare, is not easily to be accounted for, but their appearance is highly peculiar, being often spotted by a white *Lichen,* and occasionally exhibiting plants which are either peculiar to it, or very scarce elsewhere; as *Gentiana,* the *Schizæa* above-mentioned, *Astelia, Drosera,* an *Epacrideous* shrub like *Empetrum,* and a plant of *Stylidium.*

The upland or subalpine district then follows, consisting of an open space, chiefly clothed with a species of *Bromus,* a *Hierochloe,* and in some spots two *Umbelliferous* plants in dense patches, an *Araliaceous* one, a *Ranunculus,* some *Compositæ*; but no bog-plants like *Sphagnum, Junceæ, Drosera* (of which the solitary specimen discovered was unfortunately lost) *Stylidia, Cheilanthes, Lichens* and other plants, while the few woody species are wholly concealed in the glens.

Above this again comes the *Alpine Region*, wholly confined to the summits of the hills. No other is equally distinctly marked as to botanical limits, probably owing to the existence of several long low ledges of rocks, which are basaltic, and some of them columnar, and which produce a peculiar vegetation, partly indeed subalpine; but the following plants do not appear to descend below them, except indeed the two *Compositæ* above-mentioned, which, like the *Thrift* and *Rose-root* of Europe, seem to be both alpine and maritime. *Ranunculus* two species, *Cardamine, Acæna, Geranium* (!) *Potentilla, Araliacea, Gentiana, Plantago*, four *Compositæ, Epilobium*, two *Junci, Hierochloe, Agrostis, Lycopodium, Andræa, Didymodon, Conostomum, Bartramia, Bryum, Polytrichum*, with many other *Mosses* and some *Lichens.* In Lord Auckland's Islands an *Asphodelous* plant is very abundant, holding the place of *Narthecium* in our northern hemisphere; it grows from the seashore to an elevation of 800 feet above the level of the sea, and is extremely handsome, forming a conspicuous feature in the landscape from its great profusion; which is indeed so remarkable in some places, that at the distance of a quarter of a mile, the ground seems spangled with gold through its yellow blossoms. These, moreover, exhale a slight but agreeable fragrance. Three species of *Veronica* are also showy, especially the maritime one, owing to the abundance of its flowers, which make the tree look as if powdered. The blue of the alpine species is very intense, and sometimes is a bright blue azure. The *Sea-side Gentian* is as lovely a plant as can be imagined, with most delicate inflorescence and foliage that has a waxy appearance. Two of the *Compositæ* were among the handsomest productions of the island. Notwithstanding, however, the beauty of these and some others, the general aspect of the vegetation is sombre and of a much browner tint than even in Van Dieman's

Island. The prevalence of the *Myrtaceous* plant gives a lurid hue to the landscape. Of the fine *Dracophyllum* only the younger leaves are green, the older ones turn red and brown, and then drop off in immense numbers; so that on penetrating the woods they are gloomy in the extreme, from the prevalence of fallen foliage, and the general absence of the sun's cheerful rays. Few of the plants are fragrant; the *Asphodelous* plant above-mentioned is, also the white-flowered *Veronica*, whose scent resembles that of our *Jasmine*, while the alpine *Hierochloe*, like the species of our northern hemisphere, diffuses a most delicious odour. Of fetid plants there are not a few, among such the *Coprosmas* stand pre-eminent; the *Araliaceæ* too are disagreeable, and so are the *Gentians*, when drying.

After quitting Lord Auckland's Islands, the expedition visited Campbell's Island, in S. lat. 52½°, and anchored in the South Harbor. Here they remained only three days, but made the best use of their time in collecting the vegetable productions, which, as may be inferred from the geographical position, are, in many respects, similar to what prevail in the group they had left. Campbell's Island is, however, much smaller and very rugged, its mountains attaining a height of 1,200 feet; yet some additional species were gathered, especially *Mosses*. The two caulescent *Ferns* are abundant here also. "The valleys were, unfortunately," writes the botanist, "completely devastated down each side of South Harbor, where we lay, by fires that had been kindled by the sailors. The windward side of the island presents many anomalies. In particular, it may be mentioned that, probably owing to the heavy south-west gales, it is totally devoid of every thing approaching to a shrub, and many plants which, on ascending the leeward side of the island, are only seen on arriving at the summits, here descend to within a hundred feet of the sea: such as the little *Borragineous* plant (*Myosotis?*), several grasses, &c.: thus the two sides of the island exhibit very different distributions, from local circumstances."

On leaving Campbell's Island, 17th December, the Expedition bade farewell to terrestrial vegetation; and, when about the parallel of Emerald Island in 57°, but at some distance from it, they passed some *Sea-weed*, this proved the last trace of vegetation of any kind that was seen. On the 28th, in lat. 62° 40′, the first of the icebergs came in sight, and henceforth these were their constant companions; and on the 2d of January, 1841, they procured a piece of rock from off one of them. The latitude of Captain Cook's farthest south was passed on the 11th, and at 2 P.M., the navigators caught the first glimpse of an immense range of snow-capped mountains to the southward. On the 12th, in lat. 71° 49′, long. 170° 52′, they landed for a few minutes on an island off the coast, all snow, with no trace whatever of vegetation. It cannot even be stated that the remarkable substance, *Red Snow*, so common in high northern latitudes, as also in South America, and respecting the animal or vegetable structure of which, naturalists are as much in doubt as ever, exists in the extreme southern regions. On the 24th, having attained lat. 74° 23′, long. 175° 55′, they beat Weddell, the individual who had reached a higher southern position than any other; and on the 27th, in lat. 75° 47′, and long. 168° 58′, they effected a landing, with the utmost difficulty, on a little island, entirely clad with snow, save on the perpendicular cliffs where it cannot lie. The coast was lined with ice, but interspersed with fallen masses of stone, rocks, and sand, and it was impossible to advance a yard into the interior; but far as eye could reach and glasses could range, not a particle of vegetation existed.

It was on the following day, January 28th, in lat. 76° 57′, long. 169° 25′, that our countrymen first descried that active volcano, which could not fail to form a spectacle the most stupendous and imposing that can be imagined; whether considered in regard to its position, 77½° S. lat., or in reference to the fact that no human eye had ever gazed upon it before, or to its elevation of 12,600 feet above the level of the sea. What increased the wonder is, that it is but one of a stupendous chain of mountains, a portion of a new continent, of vast but undefined extent, the whole mass, from its highest point to the ocean's edge, covered with everlasting snow and ice; the sun (at that season) never setting, but day and night exhibiting the same spectacle of the extremes of nature's heat and cold. In mentioning such a phenomenon, I may be allowed to make the following extract from my son's letter:—"The water and the sky were both as blue, or rather more intensely blue than I have ever seen them in the tropics, and all the coast one mass of dazzlingly beautiful peaks of snow, which, when the sun approaches the horizon, reflected the most brilliant tints of golden, yellow and scarlet; and then to see the dark cloud of smoke, tinged with flame, rising from the volcano in a perfect unbroken column; one side jet-black, the other giving back the colours of the sun, sometimes turning off at a right angle by some current of wind, and stretching many miles to leeward! This was a sight, so surpassing every thing that can be imagined, and so heightened by the consciousness that we have penetrated, under the guidance of our commander, into regions far beyond what was ever deemed practicable, that it really caused a feeling of awe to steal over us, at the consideration of our own comparative insignificance and helplessness, and at the same time an indescribable feeling of the greatness of the Creator in the works of his hand." Such a scene must be reckoned an ample compensation for the absence of all vegetation.

On the 29th the expedition was suddenly obstructed in its southerly course by an object scarcely less wonderful, a perpendicular barrier of ice, of unknown extent, whose face presented a wall of 160 feet in height. To this Captain Ross gave the name of the Victoria Barrier: it runs in an easterly direction from Mount Erebus, as the volcano was called, in the 78th degree of south latitude. This huge rampart they coasted from the 170th parallel of East longitude to nearly 165° W., hoping to find a passage to the south, but none appeared; and at length, owing to the lateness of the season and the impossibility of obtaining safe shelter for the ships during the winter months (no small proportion out of the twelve), they took a northerly course, and on the 7th of April cast anchor, for the first time since leaving Campbell's Island early in December, off the Government Paddock, Hobarton, Van Dieman's Island.

A short time only was here allowed for the needful refreshment and repairs, when the "Erebus" and "Terror" sailed for Sydney, where numerous excursions were made, and plants collected, though few of these could have the charm of novelty; and after much kindness received from Messrs. M'Leay (father and son), they then pursued their course to the Bay of Islands, New Zealand. This country presents a good field for the naturalist, but unfortunately, the destination of the ships was restricted to the Northern Island, to which the researches of the botanist were consequently confined. Here resides one of the most amiable and liberal of men, Mr. Wm. Colenso,* of Piauhy, who has studied plants with great success, and sent home rich collections of the vegetable productions of the island. He accompanied the scientific gentlemen of the expedition in their reseaches, and has received such a stimulus from their society, that it is not too much to predict he will use his best exertions to obtain plants from every part of this highly interesting group of islands. And thus, by his means, in addition to what has been effected by Sir Joseph Banks, by Forster's voyage, by the late excellent Menzies (who chiefly botanized in the Southern Island), by the brothers Cunningham, and by Dr. Dieffenbach, Mr. Edgerley, our good friend Dr. Sinclair, and the officers of the *Erebus* and *Terror*, there is already collected a full mass of materials for a *Flora of New Zealand*,—a Flora, the more called for, now that the Northern Island and the northern portion of the Middle Island are becoming so thickly colonized.

The second voyage to the extreme south was commenced in November, 1841, when the vessels weighed anchor, with the design of proceeding to the Chatham Islands, in lat. 44°. S., and long. 176°. W., but the weather proved so thick and stormy, that to reach them was impossible, although H.M.S. *Favourite* had been appointed to meet the expedition there, and receive their despatches for England. Foiled in this intention, they proceeded due south, passing Bounty Island and Antipodes Isle, until they were entangled in Pack ice of immense extent, between lat. 62°. and 68°., from the 18th of December, 1841, till February 2nd, 1843. After this, they with difficulty reached a little higher southern latitude, namely 78°. 10′. than where they had been checked the preceding year, and more to the east, when they were again brought up by the same impenetrable Victoria Barrier. So late in the season, it was hopeless to search for winter quarters, and they returned northerly to the parallel of 60°, when they took an easterly course, doubling Cape Horn, and on the 6th of April, 1842, reached Berkeley Sound, in the Falkland Islands, the first land that had greeted their eyes since quitting New Zealand, a period of one hundred and thirty-eight days, the whole of that time having been passed under sail, or in the Pack ice, or among Icebergs. Indeed, none but those employed in this voyage can at all appreciate the difficulties and hardships that were endured. In order that this little notice may record some of the perils which have attended this Antarctic exploring voyage, we give the following extracts from a letter published in the Athenæum of March, 1843, which bear all the stamp of a faithful narration, and may tend to convey a faint idea of them.

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* Some of the many discoveries of this gentleman are published in the *Icones Plantarum* (the late Nos.), and in the *London Journal of Botany*.

"From the Bay of Islands, it had been Captain Ross's intention to proceed as far as 150th degree of west longitude, and then to go south. The winds were at first favourable, and the weather fine, though occasionally thick fogs came on, which, during their continuance, obliged us to be constantly firing muskets, beating gongs, and tolling bells, to keep company with the *Erebus*. On the 13th of December, we reached the parallel mentioned, and proceeded south, encountering the Pack ice in lat. 62½°. and long. 147° W., which was considerably to the northward of where we made it last year. We pursued our way through it very well, till the 23rd, when the ice became thick and heavy, and we were unable to get on, except a few miles now and then, by boring and shoving along with poles. We crossed the Antarctic circle on the 31st, both ships made fast, at the same time, to one floe. We saw the old year out and the new year in, on the ice between the vessels; and on the evening of the 1st, had a ball there, and kept up the dancing till three in the morning. So you see that, while blocked up by frost on every side, we had some fun; but that was the first and the last of it. We cast off occasionally, but were obliged to make fast again.

On the 18th of January, we cast off, and on the 20th, encountered a very heavy gale with a tremendous swell, which rendered our situation for thirty-six hours truly perilous; it was more like the effect of an earthquake, than being tossed about by the sea; the immense blocks of ice threatening, as it were, to grind us to powder. Indeed, no ordinarily built ship could have stood it for an hour. Soon after the commencement of the gale, the *Erebus* had her rudder rendered useless, by the head of it being wrung, and ours was completely torn from the stern-post, although the fastenings were the same size as those used in line-of-battle ships. There we were, two ships in an unknown sea, drifting about at the mercy of the winds and, I may say, of the ice, without being in the slightest degree able to assist ourselves. Fortunately, the gale moderated and the swell went down so rapidly, that the next day we were enabled to make fast and repair damages. We had a spare rudder, and after great difficulty, succeeded in shipping it, although only half so secure as it was before. We experienced no other damage of consequence; a great deal of copper was stripped off, though some of it was thrice the thickness of that generally used; also, everything that in the least protruded from the sides, was torn away. However, in a couple of days, we set all to rights, and were enabled to proceed; and to our great delight, on the 2nd of February, got into open water, having been upwards of six weeks in the Pack; this was in lat. 68°. and long. 160°. W. Here we found the edge of the Pack trend to the westward. At this time, the season was far advanced, and as, in the preceding year, we had been obliged to commence our retreat on the 9th of February, so Captain Ross did not think proper to re-enter the Pack, but proceeded along the edge to the westward. We went as far as 187° W., and then to southward and eastward. On the 20th, we experienced a gale, but in open water; still, it was bad enough, not only because of the wind, but the spray coming over us was frozen ere reaching the deck, so that every thing soon became a mass of ice; coils of rope, and all, were covered several inches thick, and most of our running-gear about the bowsprit was carried away by the weight of ice formed on them.

At midnight, on the 21st of February, we came in sight of a berg, right ahead. After half an hour's beating at the frozen ropes, we managed to get the ship round, but the Erebus missed three times; however, we escaped without much damage, and again made for the south. On the 23rd, we came in sight of the grand Victoria Barrier, and as the day was fine, stood within a mile and a half of it, finally reaching 78°. 10′. S. lat., long. 162° W., having got six miles farther than we did the year before. Under all circumstances, this was more than we expected; for after being detained so long in the Pack, and the season closing so fast, we had little prospect of attaining so much; and although we had not discovered any land, all the magnetic and other observations are very satisfactory, and the position of the Pole more fully verified. Not being able to proceed to the eastward, we were compelled to begin our retreat, which we did, tracing the Pack edge.

On the 5th of March, we re-crossed the Antarctic circle, and saw but a few icebergs. On the night of the 12th, or rather morning of the 13th, for it was a little after midnight, the night being pitch dark and stormy, with a heavy sea, in lat. 60°., we were running east, wind scarcely aft, when suddenly we found ourselves close to a chain of huge icebergs; and in hauling up to clear them (each ship doing so on opposite tacks), we came into unavoidable and, as it proved to be, exceedingly fortunate contact, striking most violently; our starboard bows met. This ship carried away jib-boom, cat-head, anchor, yard-arms, boom, and a boat. But the loss experienced by the "Erebus" was much greater; her bowsprit close off to the bows, fore-top-mast, cat-head, anchor, and a number of small spars gone. Nothing but their extraordinary strength prevented both ships being cut down to the water's edge; as it was, our consort smashed our strengthening pieces outside, while her bulwarks forward, were levelled with the deck. All the time we were foul, we continued helplessly drifting towards the icebergs, and thought ourselves inevitably lost; but on the ships clearing, we saw one part of the bergs darker than the rest, and happily it was an opening. Immediately after clearing the other ship, we were rushing close past an immense iceberg, and passed between two of these huge masses, through an opening not more than twice the breadth of our vessel, the foam caused by the sea against them, breaking over us on each side!

I have neither time nor inclination to dwell on the events of that dreadful night, which it even now makes me shudder to think of; but, some day, if it please God, through whose merciful interposition we were saved, I will give you an account when sitting over the fireside. I suppose no naval annals in the world could record such a narrow escape; however, we *did* escape, and what was more fortunate, without the loss, on this occasion, of a single life. The crippled state of the vessels prevented Captain Ross from performing all he had originally intended; which was, after reaching lat. 60°., long. 125°. W. (a spot calculated by Colonel Sabine as that of maximum intensity, but which surmise has proved to be incorrect), to have again proceeded south, if possible, as far as Cook's *ne plus ultra*, and then to this place. As it was, we made the best of our way, and with the exception of losing one man overboard, off Cape Horn, arrived here

(Berkeley Sound, Falkland Islands), in safety, without an individual on the sick list in either ship, on the 6th of April."

As might be supposed, the cruize above described could afford no opportunities for botanizing, but the time was improved by examining the New Zealand plants that had been collected. One curious fact, however, attracted the attention of the naturalist, namely the existence and vegetation of two species of *Algæ*, in the open sea and at an immense distance from land. Almost every previous voyager has noticed the famous *Sargasso weed*, though to this present day, it continues matter of dispute whether its enormous patches are propagated in the water, or at the bottom of the ocean. Very similar is the case with *Macrocystis pyrifera* and *Laminaria* (*radiata ?*), the two kinds of *Sea-weed* in question, which extend, in the southern regions, to the limits of the Antarctic circle; farther south, by two degrees, than any other vegetable production whatever. The former, *Macrocystis*, is the most abundant and was, at first, regarded as a good sign of the vicinity of land. It was, however, seen in all the latitudes which the Expedition traversed, from 35° to the immediate neighbourhood of ice, many hundreds of miles from any shore, in scattered masses, and these so large, fresh, and green, that it was impossible to conclude that either they had been recently torn from their native habitat, or that they were undergoing a slow death and a sure one. On several occasions, specimens were picked up, generally with great difficulty in those tempestuous latitudes, and they were found, on examination, to be, in every respect, similar to such plants as were gathered in the bays ashore; not only growing with the same vigour, but increasing; the ends of the branches being furnished with delicate, broad, young, green leaves, of all sizes, separating after the manner so correctly described in Harvey's *Cape Flora*. The enormous distance from any land, proved by the tracks of former voyagers and that of our Antarctic navigators, and the slowness of the currents near the places where these specimens were collected, show that a very long time *must* and that ages *may* have elapsed since these floating portions left the parent plant. This *Weed* did not make its appearance close to the ice, still less in that open water which exists to the southward of the Packs. An accurate list was kept of the ships' position and dates of the time when it was found, and highly curious it was to note how uniformly the plant seemed to fail when the temperature of the water fell below 32° or 32°, in whatever latitude that might be, and how it appeared to avoid the icebergs; 63½° is the highest south latitude at which it was seen.

The currents that transport these weeds, are very slow indeed; probably *wind-currents*, which, with the *send* of the sea, must have wafted the original parent stock from the southern portions of New Zealand and the smaller islands appertaining to it, as far as Cape Horn. Its propagation in the water is apparently exceedingly tardy, and may possibly be effected by the agency of marine animals, which swarm about the patches of this and the *Laminaria*, their sole vegetable refuge in the higher latitudes. No roots whatever have been traced in such circumstances, nor do they seem essential to its life and increase. After separating out a single plant, perhaps thirty fathoms long, one end was invariably found green, and the other gradually more and more encrusted with *Flustræ*, *Serpulæ* and *Bicellariæ*, *Sponges*, &c.; till it terminated abruptly; the cellular substance of the stem being quite exposed, not covered with any more condensed parenchyme, but apparently bitten off; while here and there, along the stem, there were often pieces taken out, apparently by some molluscous animal.

One of the officers of H.M. schooner *Arrow*, a very intelligent individual, has stated it as his opinion, founded on the examination of many specimens, that as the *Macrocystis* grows large, it finally weighs up the stone which was its moorings, and then the whole plant goes off to sea, which, as he conceives, explains the reason for so much being found alive in the ocean.

The other *Sea-weed*, the *Laminaria*, was not found so common on "the high seas;" and when it did occur, was generally seen running out into long branches.

To mariners who had thus been the sport of winds and waves, tossed about among icebergs and in the Pack, exposed to great severity of cold in the midst of an Antarctic summer, even the stern scenery of the Falkland Islands, and in its winter dress, would have its charms and its comforts. There they came into the still and peaceful waters of Berkeley Sound, a long and deep inlet of the sea, at the head of which is the capital of the colony, and indeed, the only village in it, and where, happily, the arrival of a new Governor, Lieut. Moody, R.E., with a well-selected library, offered great attractions to the officers. The needful repairs were here made to the "Erebus" and "Terror," which were hauled ashore for that purpose, and an interesting statement of the occupation of the officers is given in the "Guernsey Star" newspaper, of Sept. 15th, 1842.

"Captain Ross and the Antarctic expedition are now here. The two ships came in contact when endeavouring to escape an iceberg in the seas of the South Pole; and they will stay with us positively five or six months, to repair the vessels, and to make observations. Capt. R. has erected an Observatory at the old French Fort, built by Bougainville. A most interesting series of observations is carrying on, which will be of great value to the scientific world; those on the pendulum are noted every quarter of an hour. Astronomical observations are also carefully taken by the officers. Thermometers are placed both above ground and under it; my own (it is the Governor who writes), along with my barometer, are doing duty with the rest, and have the honour to be registered also. The Anemometers, showing the direction and force of the winds, will add much to the valuable information afforded by Capt. Sullivan, R.N., respecting these islands; and the Pluviometers are also carefully noted. The present month (May) is equivalent to the Guernsey November. A tide-guage is placed by the jetty. Also an excellent magnetic observatory, where the dip, intensity, and variation of the needle are carefully registered by these able and practiced observers; the officers relieving one another in regular succession during the performance of this duty. And never did I meet with such devotees to science. Captain Ross's little hammock swings close to his darling pendulum, a large hole in the thin partition allowing him to view it any moment; while Captain Crozier's hammock is just alongside. The floor of this room is mother earth, from our dearth of timber.

"At my request, the Captain has been so kind as to add to these observations another series, to ascertain the rate of evaporation in these islands; and Hooker, the botanist, has obligingly drawn up a report on the *Grasses;* our prevailing *Gramineæ* being considered as unknown in Europe.

"The splendid *Tussack Grass* is the gold and the glory of the Falklands, and it will yet, I hope, make the fortune of Orkney and the owners of Irish peat-bogs. Every animal here devours this grass with avidity, and fattens upon it, in a short time. It may be planted and cut, like the *Guinea grass* of the West Indies. The blades are about six feet long, and from two to three hundred shoots spring from one plant. I have proved, by several experiments, that a man can cut one hundred bundles in a day, and a horse will greedily eat five of these bundles in that time. Indeed, so fond of it are both horses and cows, that they will devour dry *Tussack* thatch from the roofs of the cottages, in preference to good grass. About 4 inches of the root tastes like the *Mountain Cabbage* (Palm). It loves a rank, wet, peat-bog, with the sea-spray dashing over it, and wherever the waves beat with the greatest vehemence, and the saline spray is carried farthest, there the *Tussack Grass* thrives the best, provided also it is on the soil it prefers. All the smaller islands, which help to form the Falkland group, and some of them are as large as Guernsey, are covered with it, and it is nutritious all the year round."

To the naturalists of the expedition, there are other charms in the animal, vegetable, and mineral productions of a group of islands, two of which are of considerable extent, one of them 130 miles long by 80 broad, and the other 100 miles by 50. Their position is interesting, too, as regards the proximity to the southern extremity of the great American continent, which, it is very clear, has materially influenced, as might be expected, their vegetation. Situated between lat. 52½°. and 54°. south, and 57°. 20′, and 61°. 46′ west long., the Falklands lie about 1,000 miles S.S.W. from the estuary of Rio de la Plata, and 240 miles N.E. from Terra del Fuego. It is true that several botanists had already visited East Falkland, the only island in the group that could be investigated on the present occasion, and I believe the only one that has been at all explored. Pernetty appears to have been the first person to collect the plants of the Falklands. He accompanied Bougainville, when the latter attempted to colonize the islands, and described many of the vegetable productions. In 1825, an interesting memoir was presented to the *Academy of Science* at Paris, by M. Gaudichaud, entitled "*Flore des Iles Malouines.*" This was the fruit of that disastrous shipwreck of the French frigate *L'Uranie,* on the Falklands, by which the officers and crew were compelled to remain there during a period of three months. M. Gaudichaud had an arduous task in rescuing from the stranded ship, an herbarium formed during the voyage, of 2,500 species, which had been immersed in water in the hold, till the paper was reduced to a pasty mass, from which the specimens had to be extracted, sheet by sheet. It was an agreeable relief from this irksome and disheartening occupation to gather the products of these little-known islands. The Flora above alluded to, enumerated one hundred and twenty-eight species, including *Cryptogamiæ*, of which from forty-two to forty-six were considered new.

"The superficies of this group of islands," says M. Gaudichaud, "may be roughly calculated at about two hundred to two hundred and twenty square leagues. Part of the coast is bordered with rocks and denes, exhibiting towards the interior some mountains of moderate elevation, and plains covered with lakes and marshes. During the winter, which is long and very severe, snow falls to a depth of many feet. The surface-soil is composed of a spongy turf which begins where the coast-sand ends, and stretches uninterruptedly over the mountains and the level lands. This soil is most unfriendly to cultivation, and French, Spanish, and English colonists have successively given up the attempt in despair, and forsaken these islands. Still there are plants which affect peaty lands, and grow here abundantly. Not a tree is to be seen, the only approach to it being a shrub, the *Veronica decussata,** which attains a height of 6 feet, but is extremely rare; it was originally detected by Commerson, in the Straits of Magelhaens, and named, in his MSS., *Hebe Magellanica.* The aspect and foliage resemble the myrtle.† Among the larger plants of the Falklands are *Chiliotrichum amelloides,* a syngenesious shrub, about 3 feet high; the *Festuca flabellata* (or *Tussack Grass* mentioned above), whose fine fan-shaped leaves are nearly 6 feet long, and which entirely covers the islets; and finally, *Pernettia empetrifolia* and *Empetrum rubrum,* under-shrubs of moderate stature, already found by Commerson in the district of Magelhaens. The other plants seem as if they all had been levelled low, so rarely does one species rise, in the least, above the rest. They generally form compact, close, grassy tufts, very unpromising for the botanist. The prevailing tribes are *Lichens, Ferns, Mosses, Cyperaceæ, Gramineæ, Compositæ* and *Ranunculaceæ.* The *Algæ* can hardly be considered as belonging to these islands, though they abound in the bays; they are marine productions, and have no affinity with the growth of the soil. It is very singular, that neither *Leguminosæ*, *Labiatæ*, *Boragineæ*, or *Chenopodeæ*, groups which prevail in almost every part of the world, exist in the Falklands. Seven species of *Gramineæ*, together with three *Cyperaceæ*, and four *Junci*, are found in such profusion, and form such dense tufts, as to engross nearly all the soil, to the great exclusion of other plants. When this thick grassy turf is separated, a prodigious quantity of *Lichens*, *Mosses*, *Lycopodia*, *Marchantiæ* and some other *Cryptogamiæ*, with several *phænogamous* species, may be seen beneath it, mingled with small suffrutescent plants, whose stems are weak and creeping.

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* This shrub is confined to West Falkland.

† In Jersey, where this shrub is not uncommon in gardens and grows about three or four feet high, it is called *Box-Myrtle.*

"When the periodical return of winter puts a close to this annual vegetation, the water which remains in the soil as in a sponge, preserves from entire decomposition those numerous plants which die, and their woody portions form a mass, which yearly adds to the amount of peat-bog. We may be allowed to conjecture that in these islands, as is the case in other parts of the world, the vegetable remains, by their gradual and imperceptible accumulation, will finally fill up the lakes."

In the following year, namely 1826, a very similar memoir appeared in the 4th volume of the *Mémoires de la Société Linnéenne*, under the same title, *Flores des Iles Malouines*, and drawn up by the still more unfortunate M. J. Dumont d'Urville. This accomplished traveller and naturalist, as is well known, had but recently returned from a second adventurous voyage in the Antarctic regions, having escaped all the dangers attendant upon such hazardous undertakings; but, on a little excursion of pleasure in the environs of Paris, he and his whole family fell victims to that most awful accident on the railroad of Versailles, in May, 1842. In the voyage, when the materials for his *Flore des Malouines* were collected, M. d'Urville commanded the "*Coquille*," and on the 18th of November, 1822, cast anchor in the immense Bay of *La Soledad*. "What a descent," he says, "does the botanist make, who from the shores of Brazil, is suddenly transported to the flats of the Malouines! To those immense forests, countless shrubs, and impenetrable thickets, which had perpetually arrested his steps and gaze, succeed bare hillocks, and boundless plains, not a tree, or even a real shrub, breaks the uniformity of these vast solitudes. The traveller, assailed by wind, rain, and hail, has often to traverse many miles before reaching the slightest shelter; for the earth itself, as uniform as its vegetation, presents no jutting rock among its valleys, nor any of the hollows which are so common in wild and uncultivated regions. Notwithstanding, however, this extraordinary nakedness, there is no country where the soil is so thickly clad with a dense, though low, covering; for almost all the indigenous herbaceous plants and little shrubs, are provided with creeping roots and off-sets that strike into the ground, by which they are firmly fastened to the soil, and woven one among another,—a wonderful provision of nature, doubtless intended to protect vegetation from the destructive power of those tempestuous winds so prevalent in these latitudes.

" A stay of twenty-six days, and twelve botanizing excursions, afforded one hundred and eight distinct species of flowering plants; and I shall hardly suppose that more than a quarter part of the productions of the island can have escaped my notice, or that more than one hundred and forty species, or thereabouts, can exist on the Island of Soledad; for my researches were very diligently pursued. The circumstance, too, that M. Gaudichaud, a skilful and close observer, only found, during his stay of nearly three months, eleven plants which I had not gathered, confirms this opinion; and out of these eleven, the *Azolla* and *Rumex acetosa* are only cited by him from memory, while the *Veronica decussata* was given him from the other island, thus reducing the difference between us to eight. On the whole, therefore, the Flora of these islands may be said to be richer than a first glance would lead one to suppose.

"In spite, too, of the hundred degrees of latitude which sever this island from Europe, there are many points in which their botanical productions resemble each other, as numerous examples will prove.

"The gigantic Grass (*Festuca flabellata*, commonly called *Tussack*) which covers three-fourths of the Isle of Penguins and all the sandy dunes of the Bay of La Soledad, and whose enormous tufts look, at a distance, like a thick-set copsewood, has much affinity with our *Dactylis.* On the same dunes grow *Apium graveolens, Statice cæspitosa, Triticum junceum* (?) and *Lolium perenne.* The *Arundo pilosa, Avena redolens, Aira flexuosa* and *Festuca erecta* constitute, of themselves, an excellent pasturage of great fertility, and cover an extent of many miles. On first observing *Cerastium vulgatum, Alsine media, Sagina procumbens, Senecio vulgaris, Veronica serpyllifolia,* and *Rumex Acetosella,* I inclined to the opinion that they were imported by man; but, afterwards, the great profusion and distance from cultivated spots at which they grow, made me consider them indigenous; for it is hard to believe that winds or birds can have transported the seeds; and these European plants were, moreover, almost all seen by Commerson about the Straits of Magelhaens, nearly fifty years ago, with the addition of *Cardamine hirsuta, Thlaspi Bursa pastoris,* and *Primula farinosa.*

"Many of the most prevalent European genera are represented in these islands by species which strongly resemble those of the Old World; and of the eighty genera of plants which constitute the Flora, there are only between fifteen and twenty which are not common to the European continent. These are *Oreobolus, Gaimarda, Astelia, Callixene, Sisyrinchium, Drapetes, Nanodea, Calceolaria, Nassauvia, Baccharis, Perdicium, Oligosporus, Chiliotrichum, Nerteria, Azorella* and *Misandra.* In a word, the affinity is so considerable that I should almost think a botanist would feel himself more strange if transported suddenly from Morbihan to the shores of the Var, than if set down on the Malouine Islands.

Nature, so fertile and varied under the Equator, becomes more uniform in northern regions, and having apparently lavished all her types on the vegetation of the tropics, is reduced, so to speak, to assign similar genera to the most widely-severed portions of our globe.

"The majority of plants, inhabiting the Malouines, have been found also by Commerson, near the Straits of Magelhaens, and by Forster on Tierra del Fuego; thus leading to the supposition that these islands once formed a portion of the great South American continent. The soil is everywhere turfy below, and so spongy as to imbibe moisture with great rapidity and leave the grassy surface dry. This turf is much thicker in the interior than near the sea-shore, and has frequently such abrupt perpendicular edges as resemble the work of man. These natural ramparts are not uncommon on the high grounds, often rising to an elevation of 4 or 5 feet above the surrounding land, and their formation is a subject of difficult explanation. They afford a most desirable shelter from the winds to the numerous herds of wild horses. Streams of fresh and pure water everywhere intersect the islands; and though they are marshy at the brink, the close and firm nature of the vegetation prevents the earth from being seen, or the feet of the traveller from sinking. There are fine lakes in the plains, and basons of water on the very summit of the mountains. Water is everywhere abundant; but most of the plants are of a resinous nature, or furnished with a varnished surface, which protects them from the effects of so much wet. The dry nature of the plants was shown by the facility with which I preserved my specimens, notwithstanding the cold weather and the rains which never ceased to fall during the whole time of our anchorage at the Islands, between the 18th of Nov. and the 18th of Dec., corresponding with May and June of our hemisphere.

"This residence was long enough to show how fearful are the winds in these islands, and how admirably fitted the vegetable productions of the soil are to resist their violence.

All those plants whose stems rise a little above ground, are flexible, and bow beneath the blast, while the chief part are of lilliputian growth, and form such dense and interwoven masses, that the very soil must flee away in dust, ere they could quit their position. Nothing can be more singular than the enormous tufts of *Bolax*, which at first are no bigger than molehills; but, by the constant addition of new shoots, swell in all directions, and attain a height and breadth of some feet. A resinous and strong-smelling substance continually exudes from all parts of these plants, and is perceptible at a considerable distance. If carefully examined and analyzed, it is probable this gum might be found to possess some valuable properties."

M. d'Urville visited Mount Châtellux, 17 miles distant in a straight line from his ship. "Two days were devoted to this excursion, in each of which we walked for fifteen hours; and this long walk gave us a good opportunity of examining the nature of the island, the result of which was that the farther you proceed inland, the less varied is the vegetation. Once past the dunes, marshes and rocks, which have each some peculiar plants, and the country stretches for miles in uniform plains, solely producing the three Grasses mentioned above, and a few thinly scattered tufts of the *Bolax*. When the ground rises again, the variety becomes greater, and on the summit of Mount Châtellux, I found almost all the species that had been seen in the lower situations, though reduced to half or a third of their usual dimensions; except, indeed, the *Bolax*, which grew as strong as elsewhere, though springing out of the entirely naked rock. Five plants alone appeared peculiar to these elevated spots; a beautiful *Aspidium* (*A. mohrioides*); the curious *Nassauvia serpens*; *Cenomyce vermicularis*, white as snow; and two minute plants which grow in the closest tufts, *Drapetes muscoides*, originally found by Commerson in the Straits of Magelhaens, and a new *Valeriana*, which I named *sedifolia*. The beautiful *Lomaria Magellanica* is rare on the plains, but abounds among the courses of quartz stones that may be seen on the mountain sides; while *Usnea melaxantha* carpets the surface of these huge blocks, with its fronds varied of yellow, fawn and black."

M. d'Urville increases the number of Falkland Island species to two hundred and seventeen, of which ninety-seven belong to *Cryptogamia.*

In 1841, Mr. Wright returned from a mercantile voyage to the Falkland Islands, where he very laudably employed his leisure time, during the summer months, in making a beautiful collection, which was presented to me;* among them are some species that had not been previously found on the Islands; and still more recently, a few specimens, gathered there by Lieut. Robinson, and communicated to me by the Admiralty, afforded a *Hamadryas,* a very fine *Draba* and a *Gleichenia,* which appear to have been overlooked by all former collectors.

After these and other researches, it is hardly to be expected that much was left for the botanists of the "*Erebus* and *Terror*" to discover; especially, seeing that their stay was almost wholly in the winter months. Yet, notwithstanding these disadvantages, the number of species of flowering plants, when the last intelligence came away, on the return of the expedition from Cape Horn, amounted to one hundred and seven, gathered by one individual. Of *Cryptogamia,* as may be supposed, there is a much greater proportion, and many of them are extremely beautiful; and copious notes and drawings were made of both, which cannot fail to be of great value.

The "*Erebus* and *Terror*" came to anchor in Berkeley Sound, on the 5th of April, 1842, the commencement of winter. The purser went ashore and returned after nightfall, but was entreated to bring on board a specimen of some vegetable production of the country. He grappled in the dark, and obtained a plant of *Shepherd's Purse!* "But," said the disappointed botanist who had made the request, "I hope for better things to-morrow." A letter, dated Berkeley Sound, East Falkland, August 28th, 1842, proceeds thus:

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* Several of the plants have been published in the 6th vol. of the *Icones Plantarum Rariorum.*

"Our stay in this Island has afforded me time for investigating its botany as fully as the wintry season and stormy weather will permit, and I would fain hope that little has escaped my notice. Some of my specimens are imperfect, owing to the time of year; and I have only gathered such because they may yet be determined at home; or if not, they may add one or two to certain *Natural Orders*, whose geographical distribution is a subject of much interest to me. Among the *Lichens* I have had a fine field here; some of them, especially the rupincolous species, are particularly handsome.

"The collection ready for sending home, contains numerous specimens of every tribe of plants found in the Falklands, with the exception of the *Algæ*, which here attain gigantic dimensions. My notes are rather copious, both on the plants themselves, and their distribution in the various parts of the Island. All the plants enumerated by Gaudichaud as having been found by himself and others, have come under my notice, except three or four.

"*Mosses* are now, and only now, showing fructification; many of the species I have only found in a barren state, especially among the *Pleurocarpi*.

"There are of *Andræa*, two sp. Of *Sphagnum*, one (or what might be called three). *Grimmia*, two, in fr. *Trichostomum*, our hoary friend (*T. canescens*), barren and very scarce. One *Orthotrichum*, resembling the Kerguelen's Island maritime species. *Didymodon*, two or three. *Dicranum*, two. *Campylopus*, one. *Tortula*, two. Three *Brya*, in fruit. *Funaria*. *Bartramia*, two, in fruit. *Polytrichum*, two, barren. Several *Hypna*, and two *Hookeriæ*, all barren. About ten species of *Jungermannia*, two *Marchantiæ*, and a *Riccia*. There are about thirty species of *Lichen*, and among these, *Usnea melaxantha*, which is quite different from the yellow Kerguelen's

Island *Usnea,* being larger and more handsome; also some beautiful species of *Sticta* and *Roccella,* and several *Cladoniæ.*

" My *Sea-weeds* are not examined, and I shall send none of them home till I have done so. There are three species of *Macrocystis,* and several *Laminariæ,* here taking the place of the *Sargassa* of milder climates, some lovely *Florideæ* and the *Ballia,* one of the commonest sea-weeds here, and attaining a large size. I do not doubt its being the *Sphacelaria callitricha* of Agardh.

" *Marine Confervoid* species are abundant, many of the bays being covered with an odious-looking green slime, formed by one or two kinds. There are also several fresh-water species.

" *Fungi* are scarce. On our first arrival, two large *Agarics* and a yellow *Helvella* (?) were common, but I neglected to gather them, and when the cold weather set in, they immediately vanished. I have, however, requested my friend, M. Lyall, of the '*Terror,*' to collect them when the spring begins, at which time we shall be absent at Cape Horn, and I have provided him with a bottle of spirits for the purpose. The other *Fungi* are two small *Agarics,* a *Lycoperdon* and a *Peziza.*

" Of *Ferns* I possess two *Lycopodia,* two *Steganiæ,* the *Hymenophyllum cæspitosum* (the smallest *fern* I ever saw), a handsome new *Aspidium,* very rare, and gathered last week in the stream of stones described by Darwin, and a *Gleichenia,* kindly given me by the Assist.-Surgeon of H.M.S. 'Arrow,' but which I have never seen alive.

" Since beginning this letter, I have taken a long walk to visit *Uranie Bay,* where the French navigator, Freycinet, lost his ship, 'L'Uranie.' Leaving our anchorage, I proceeded to the south end of the upper extremity of this harbour, along a slaty beach, overhung with low cliffs of clay-slate, covered with *Gunnera, Acæna, Oxalis enneaphylla, Cardamine glacialis, Nassauvia Gaudichaudii, Homoianthus echinulatus,* with here and there bushes of *Empetrum rubrum* and *Chiliotrichum amelloides,* and many smaller plants, some of them maritime, as a fine *Statice*, a little *Psyllium*, and four or five curious forms of *Umbelliferæ*, as the *Bolax*, which forms large overhanging semi-circular mounds, and the little *Azorella lycopodioides* and *filamentosa*, a new *Caldasia* and a most singular *Hydrocotyle* (?) with fistular simple linear leaves. The shore is covered with entangled masses of two species of *Macrocystis* and other *Sea-weeds*. A *Sticta*, one of the most beautiful of *Lichens*, forms large leafy patches among the *Grasses*, of several sorts, while the barren rocks are covered with *L. geographicus*, a noble *Roccella*, sometimes nearly a foot long, and other fine *Lichens*, which completely whiten them where they are most exposed to the light.

" The holes and crevices are full of *Mosses* and *Jungermanniæ*, a *Riccia*, two *Hookeriæ*, two *Bartramiæ* and others. It has been the first fine day we have enjoyed for a long while, and the plants are just beginning to sprout. *Viola Magellanica* and the *Oxalis* are showing their leaves, and the tufts of grass look green at the base, especially the fine *Hierochloe* (?), of which the old leaves, drying in the sun, smell delightfully. The poor *Birds*, whose breeding-season has commenced, are revelling in the change of weather. The *Steamer-Ducks* flock along the water, so tame that any one may come within a yard, as they are pluming themselves and uttering their wheezing clack-clack, presenting a curious contrast to the restless shy *Black-backed Gull*, which watches them from over-head, and whenever the poor *Duck*, after a dive, emerges with a fine sea-animal in his bill, this pirate *Gull* darts down and seizes the morsel, before the original captor has had time to draw his breath. Little *Sandpipers* are running and chattering along, and every here and there, the beautiful *Kelp Goose*, with her spotless white *Gander*, appears sitting on a rock, and picking choice specimens of *Algæ*. A smaller *Gull*, with black head and beautiful rose-coloured breast, has the habits of a *Tern*, perpetually screaming and suddenly dropping, with wings erect, on the water, with a little splash, to pick up some incautious shrimp.

"Leaving the beach, the upland grounds are low and flat, intersected by small valleys and slow streams, running deep in the boggy earth; the *Arundo Alopecurus*, forming an excellent pasturage for cattle, covers all the bogs, and the *Bolax* grows in large hassocks on the drier tracts. Here one has constant companions in the *Caracara Hawks* (*Polyborus*), which follow the stranger everywhere, perching close by, upon the ground, frightening the poor rabbits out of their forms, and narrowly watching every motion. Nothing grows so high as the grass, though now and then tufts occur of the *Empetrum* and a little *Arbutus*, accompanied by *Corniculariæ*, *Cenomyces* with red *pyxidia*, and *Cetrariæ*.

"The valleys, again, are full of bushes of *Chiliotrichum*, *Trichostomum lanuginosum*, *Sphagnum*, and a few other *Mosses*. Presently a *Snipe* gets up, or a flock of *Thrushes*, or the beautiful red-breasted *Starling* (?) twittering and chattering from bush to bush. The *Upland Geese* are pairing, and geese though they be, an experience of five months, during our stay here, has taught them to fly away, instead of sitting still to be shot at. The long creeks, which run up from the Bay, have their banks covered with slimy confervoid *Algæ*, and here the little *Teal* swim and whistle in flocks; while the *Black and White Oyster-catchers* keep poking their long red bills into the ooze; and busiest of all, the beautiful *Chionis* stands, scarcely heeding you, while the low water affords him a feeding-time.

"The hills are all quartz; and, wherever that formation presents itself, it may be recognised by the turf containing patches of the *Astelia*, *Caltha appendiculata*, *Oreobolus obtusangulus*, *Gaimarda australis* and *Myrtus Nummularia*. The fine *Stegania* grows only near quartz-rocks, which, though so dry and hard, are rendered perfectly beautiful by the *Usnea melaxantha*, forming a mimic forest, accompanied by other foliaceous and crustaceous *Lichens*. 'Uranie Bay' is of sand, with sand-hills at the back, like the Denes of Yarmouth, in Norfolk; among these grows a fine *Grass*, with two beautiful *Senecios*, and large patches of a *Tortula*, like *ruralis*. It was among these hills that Freycinet encamped his crew, and a sketch, which I have copied from one that was done at the time by an English sailor of the party, and which belongs to the Governor here, represents the scene. In Weddell's Voyage you will find some particulars of this disaster. The sand is of the purest snowy white, against which the sea appears of a brilliant blue. Large beds of *Kelp* cover the rocks outside, and have now hidden the wreck of the '*Uranie*,' of which no sign appears, but some copper and a few iron watercasks on the beach.

"At the back of the sand-hills are several pools of water, in which I gathered Gaudichaud's *Limosella* and *Myriophyllum*; but though I have been hunting ever since I came here for the *Azolla*, in similar situations, not a trace of it has met my eyes. On the beach lie huge trunks of *Sea-weeds*, perhaps the *D'Urvillea*, branched like a tree; sometimes a foot in diameter, and often 12-14 feet long. A horizontal section of the stem presents oval concentric rings, answering to successive periods of its growth. These rings are composed of cells, containing a viscid fluid, which evaporates as the trunks dry up, till these, shrinking excessively, become harder than horn. It is singular that the *Usnea*, perhaps the largest form among *Lichens*, presents a still more striking analogy to *exogenous vegetation*; so remarkable that I think it must be noticed somewhere. A horizonal section of any of its stems or larger branches, exhibits a distinct cortical layer, of a yellow colour, and coriaceous consistency, loosely attached to an inner corky layer, which sends medullary rays through a hard red horny axis, to meet a central corky pith. Except that these layers are all separate forms of cellular tissue, they are, in every respect, analogous to the *Bark*, *Wood*, and *Pith* of a tree. I think that the red horny tissue expands over the *excipulus* of the thallus, and gives off the *peridia*."

The most interesting and useful vegetable production of the Falklands is undoubtedly the *Tussack Grass*; a name evidently given to it, from the immense tufts or *tussacks* formed by the plant; nor, indeed, is the appellation wholly restricted to this valuable esculent grass, but it is also applied to a species of *Carex* (*C. trifida* of Cavanilles), which grows in a similar manner; a circumstance which gave rise to an important error: for specimens of the *Tussack Sedge* were put into the hands of the Botanist, that a description might be forwarded to the Colonial Office, and accordingly a description of the *Sedge*, which, indeed, in its young state, is eaten by the cattle, was transmitted instead of the grass. The error was quickly detected, and, at the Governor's request, a full account, with a drawing and corresponding specimens, were received at the Colonial Office, and these have been obligingly placed in my hands, that they may be added to this brief notice of the botanical results of the expedition. A correct acquaintance with this *Grass* is the more important, because, as is well known, the great value of the Falklands to Britain arises from the vast numbers of cattle, (sprung from the original stock left many years ago by the Spaniards) which feed and fatten there, and with which, vessels touching at those islands can be readily supplied. Also, because the nature of the soil and climate producing this grass gives every reason to believe that the shores of a vast extent of England, Scotland and Ireland, would suit it equally well; more especially the Western coasts of the two latter countries. Indeed, public curiosity has already been strongly excited at home upon this topic by the mere newspaper reports, to a degree which is perhaps only known to the writer of this article, who, from the deep interest he naturally feels in all that concerns the Natural History results of this expedition, and from his connexion with the Royal Botanic Gardens at Kew, has been overwhelmed with applications for seeds and plants of *Tussack Grass*, from the proprietors of unprofitable sandy and peaty soils throughout the British Dominions. To all, his answer has been, that, as yet, no living plants or seeds have reached

Europe, which is, unfortunately, the fact. Already, too, from the best sources, a very excellent account, with a plate representing the tufts of this grass, has appeared in the *Gardener's Chronicle* for March 4, 1843; a work so deservedly encouraged, that, through its medium, the *Tussack Grass* is, by name and general aspect, rendered familiar to almost every one.

Pernetty, who, as above stated, accompanied Bougainville in the French ship, *La Boudeuse*, in 1766, would seem not to have fallen in with the finer tufts of this grass; if indeed it be not the *Carex trifida* of which he says, "We were half a league distant from two flat islands, which, at first view, appeared as if covered with small copse-wood; but, as we afterwards discovered on landing, it was but tall Bullrushes or Cornflags; they grow, each of them, about 2½ feet high, and afterwards shoot out a tuft of green leaves, to nearly as much height more."

Bougainville's own notice of the plant is far more correct: "All the sea-coast and islands are covered with a plant, which has been erroneously termed a Cornflag; it is, however, a species of grass, of the most beautiful green colour, and growing to a height of 6 feet. It forms a hiding place for the sea-lions and sea-wolves, and served as a shelter to ourselves during our wanderings. A house may be formed of it in a very short space of time; the inclined stems, when fastened together, serving as a roof, while the dried straw makes a tolerably good bed. With this plant we also thatched our dwellings. The root is sweet and nutritious and preferred by beasts to any other food."

The Botanist, M. Gaudichaud, who accompanied Freycinet in his Voyage round the World, after enumerating the remarkable plants of the Falkland Islands, thus speaks of the *Tussack Grass*. "Finally, there is one production of still higher interest, because it furnishes abundance of nourishing food all the year round, and this is the great Grass, *Festuca flabellata*, which covers two thirds of the Isle of Penguins, and the other islets in the French Bay, and moreover, according to the statement of M. Orne, may be seen in equal profusion on the shores of all the Falklands. The plant grows from 4 to 6 feet high, its leaves are sheathing and compressed. The inner portion of the stem, to the height of 5 or 6 inches above the root, is white and soft, crisp, agreeably flavoured, somewhat resembling Filberds, and very wholesome. This substance consists of the inmost sheathing bases of the central leaves and stalks closely compressed, and encased within each other. The taste is perhaps most like that of the highly esteemed *Mountain Cabbage Palm.*"

Mr. Wright brought home a similar account of the *Tussack Grass,* and assured us that its young shoots are boiled and eaten like asparagus. He also showed us specimens and a drawing of the tufts of this Grass, as they appear in the small islets. From this drawing the woodcut was made for the *Gardener's Chronicle,* and the editor of that work has had the kindness to place the block in our hands, to be used on the present occasion. By far, however, the most interesting account of the *Tussack Grass* is that given in the Report abovementioned, which was sent by the Governor, Lieut. R. C. Moody, R. E., to the Colonial Office.

"During several long rides," he says, "into the country, I have always found the *Tussack* flourishing most vigorously in spots exposed to the sea,* and on soil unfit for any other plant, viz. the rankest peat-bog, black or red. It is singular to observe the beaten footpaths of the wild cattle and horses, marked like a foot-track across fields in England; extending for miles over barren moor-land,† and always terminating in some point or peninsula, covered with this favourite fodder; amid which one is almost certain to meet with solitary old bulls, or perhaps a herd of cattle; very likely a troop of wild horses, just trotting off as they scent the coming stranger from afar. To cultivate the *Tussack Grass*, I should recommend that its seed be sown in patches, just below the surface of the earth, and at distances of about 2 feet apart; it must afterwards be weeded out, for it grows very luxuriantly, frequently attaining a height of 6 or 7 feet. It should not be grazed, but cut and reaped in bundles. If cut, it quickly shoots up again, but is much injured by grazing; for all animals, especially pigs, tear it up to get at the sweet nutty-flavoured roots. I have not tried how it would be relished if made into hay, but cattle will eat the dry thatch off the roof of a house in winter; their preference to *Tussack Grass* being so great that they scent it a considerable distance, and use every effort to get at it. Some bundles, which had been stacked in the yard at the back of Government House, were quickly detected, and the cattle from the village made, every night, repeated attempts to reach them, which occasioned great trouble to the sentry upon duty."

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* "The wild west coast of Ireland would exactly suit this grass."

† "The poor soil, above described, covers about one fourth of the surface of the country and is the worst of all, as to herbage."

The same Report contains also Dr. Hooker's description of the *Tussack*, which I here transcribe, and to which I have likewise added a figure and analysis, also sent home by the same Botanist. Dr. Hooker speaks of it under the name of *Festuca flabellata*, and it is certainly the plant so called by Lamarck, (who described it from Commerson's specimens, gathered by the latter Voyager in the Straits of Magelhaens,) and of the French Naturalists; but he correctly refers it to the genus *Dactylis*, and suggests that it may probably be the *Dactylis cæspitosa* of Forster. A comparison with the original plants, though very indifferent specimens, deposited by Forster in the Banksian Herbarium, prove that Dr. Hooker is quite right in this idea. Forster found the plant growing on New Year's Island, near Staten Land, and says of it that the *Magelhaenic Shag*, (*Pelicanus Magelhaenicus*,) commonly builds its nest upon the top of the great tufted bases of this plant, which are often two feet high.

DACTYLIS CÆSPITOSA. (Tab. IX. X.)

Panicula spiciformi densa interrupta valde compressa, locustis brevissime pedicellatis late ovatis 4-floris, glumis subæqualibus, palea inferiore puberula apice bifida breviter aristata, culmis validis compressis foliisque longissimis distichis glaberrimis.

Dactylis cæspitosa. *Forster in Comment. Goett.* 9. *p.* 22. *Willd. Sp. Pl. v.* 1. *p.* 407.

Festuca cæspitosa. *Rœm. and Schult. Syst. Veget. v.* 2. *p.* 732. *Kunth, Agrostogr. p.* 408.

Festuca flabellata. *Lam. Encycl. Bot. t.* 2. *p.* 462. *Gaud. in Ann. des Sc. Nat. v.* 5. *p.* 100., *and in Freyc. Voy. Bot. p.* 409. *D'Urv. in Mém. Soc. Linn. v.* 5. *p.* 603., *and in Duperrey Voy. Bot. p.* 36.

HAB. New Year's Island, Staten Land, *Forster.* Straits of Magelhaens, *Commerson.* Hermite Island, Cape Horn, *J. D. Hooker.* Falkland Islands, in the neighbourhood of the sea, on peaty, rocky and sandy soil, very abundant :—not seen inland.

This remarkable *Grass* is perennial, and forms, with its densely matted roots, crowded but isolated hillocks, or tumuli, 3-6 feet in height, and 3 or 4 feet in diameter, from which the leaves and stems spring. *Roots* fibrous, the fibres very tortuose. *Stems,* or *culms,* numerous, rising from the hillocks, erect, branched or divided only at the base, 3-4 feet long, smooth, compressed, leafy, pale yellow, abounding in saccharine matter, and when young, esculent, even for man. *Leaves,* the lower ones very long, not unfrequently 5 to 7 feet, exceeding the length of the stem, 1 inch broad at the base, and gradually tapering to an acuminated point, the upper side is channelled from the involute margins, from above the middle they are curved downwards, or are even pendent; the stem-leaves are gradually shorter upwards, erect, the sides involute, their colour a pale glaucous green. The *sheaths* are, like the stem, compressed, smooth, striated, cleft at the top; the *ligule* very thin and membranaceous, rounded, or a little longer than broad. *Panicle* a span or more long, dense, so much so as to form a slightly interrupted (not continuous) *spike*, 1½-2 inches broad, compressed, obtuse;—the branches short, erect; the rachis angled. *Spikelet* (or *Locusta*) composed of 3-4 florets, of a pale yellow-green colour. The *calycine glumes* are lanceolate, acuminate, longer than the spike of flowers, slightly keeled, shortly ciliated on the back, 3½ lines long, the margins a little involute, and as well as the apex, membranous and transparent, the superior one a little longer than the other, 3-nerved, the nerves ciliated. The *lower glume* or *palea* of the corolla is ovate, concave, compressed, sharply keeled, bluntly trifid at the apex, with the middle one of the three teeth the longest and somewhat incurved and awl-shaped, 5-nerved: the lateral nerves above evanescent, the margins scariose, the keel and nerves ciliated; the upper one much shorter than the lower, and with a double keel, 2-nerved, emarginate at the apex, except the nerves, which are ciliated and green. *Hypogynous scales* 2, broadly obovate, obliquely 2-lobed, the lobes ovate, acute, their margins laciniated, they are membranous, transparent, and only a little shorter than the ovary. *Stamens* 3. *Anthers* pale yellow. *Ovary* nearly ovate, glabrous. *Styles* elongated, approximate at the base. *Stigmas* plumose, lax. *Caryopsis,* or *fruit,* elongato-ovate, or almost cylindrical, slightly trigonous, of a pale yellow colour, and smooth."

References to the plate, and analysis of *Dactylis cæspitosa.* TAB. IX, X. Fig. 1. spikelet of flowers, *f.* 2. single flower, *f.* 3. Stamens, pistil and hypogynous scales, *f.* 4. one of the hypogynous scales, *f.* 5. pollen-granules:—more or less magnified.

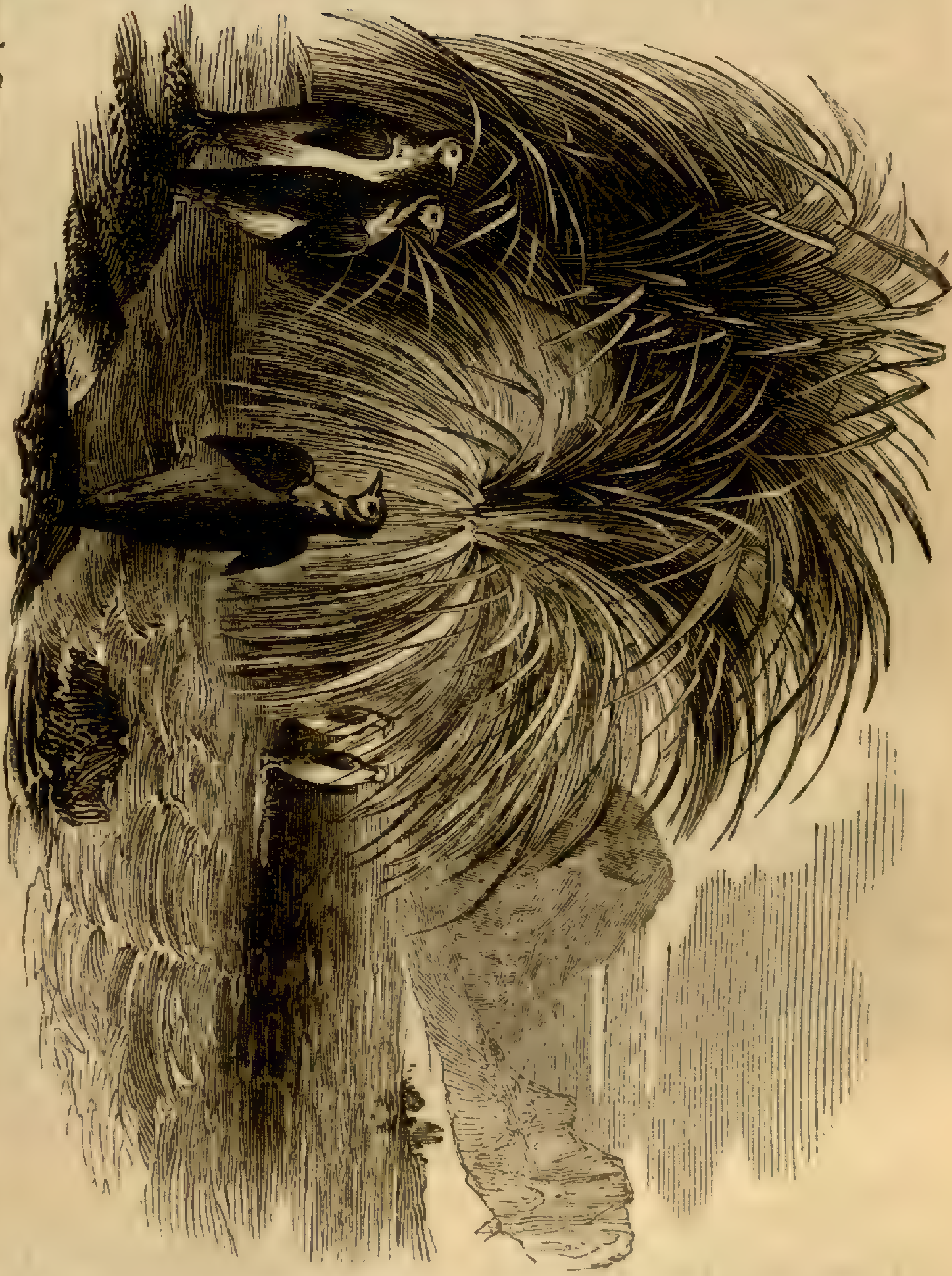
The opinion of the writer of the foregoing description is, that with proper attention to its propagation and locality near the coast, and preservation from being entirely eaten down where it already abounds, the *Tussack Grass* would, alone, yield abundant pasturage to as many cattle as there is ever likely to be a demand for on the Falklands.

The same writer proceeds to inform us that the immense abundance and luxuriant growth of this Grass, render it quite a striking feature in the landscape. The roots form great balls, which even rise 5 or 6 feet above the ground, and the long leaves, springing from the culms, hang down all round in the most graceful manner. The heaps or "tussacks" grow generally apart, but within a few feet of each other, the intermediate space of ground being quite bare of vegetation, so that in walking among them, you are perfectly hidden from view, and the whole *Tussack ground* forms a complete labyrinth. *(See the adjoining Wood-Cut).*

The experiment of cultivating this valuable Grass promised to answer well in the Falklands; where, in the Governor's garden, it was coming up strongly from seed, drilled in rows, like Turneps. It must, however, be taken into consideration, that for *Tussack* to thrive in this country, the plant must so far change its habits of the Southern Hemisphere, as to forget that our winter is its summer, and vice-versâ.

D'Urville says that the Penguins build their nests and hatch their young beneath the shady tufts of this grass.

The same despatch to the Colonial Office, in which the above description is given, contains also a letter from the botanist of the Antarctic Expedition to the governor, in which another grass, among the many valuable *Gramineæ* which the Falklands produce, is particularly noticed. This is of scarcely inferior importance to the *Tussack*, and being much more universally diffused over the islands, it must be far less particular as to soil and situation. It is a kind of *Fescue-Grass*, the *Festuca Alopecurus* of D'Urville (*Arundo Alopecurus*, Gaudichaud). In the Report presented to Govr. Moody by the botanist, and transmitted to Lord Stanley, it is stated: "Another grass, however, of far more extensive distribution than the *Tussack*, scarcely yields to it in nutritious qualities. It covers every peat-bog with a dense and rich clothing of



Tussack Grass of the Falkland Islands, from the original drawing in the possession of Sir W. J Hooker.

green in summer, and a pale yellow, good hay during the winter season. This hay, though formed by nature without the operation of mowing and drying, keeps those cattle which have not access to the *Tussack* in excellent condition, as was proved by the beef with which our hunting parties supplied, for four months, the Discovery Ships. No bog, however rank, seems too bad for this plant to luxuriate upon, and as was observed during a surveying excursion which had been made to Port William, although the soil on the Quartz districts was very unprolific in many good grasses which flourish on the clay-slate, and was, generally speaking, of the worst description, still this *Fescue-Grass* did not appear to be affected by the difference, nor did the cattle fail to eat down large tracts of such pasturage.

"The numerous troops of horses, too on the flanks of th Wickham heights, can procure little other fodder; while those of Mount Lowe and Mount Vernet must depend upon it entirely. Should the *Tussack* disappear from any part of the Falklands where stall-fed cattle are kept, it might be advisable to treat this *Fescue Grass*, as hay in England; by which process its nutritious qualities would, doubtless, be much better secured to the animals during winter, than by suffering the leaves gradually to wither, and not gathering them till nature has evaporated all the juices. For sheep it might also answer well, when converted into hay, though it seems likely that the wet nature of this grass, together with the damp situations where it grows, would prevent these creatures from thriving upon it, if restricted to such diet; and at all events, newly imported flocks should not be suddenly removed from dry food to what is of so very succulent a nature."

The Governor states in another despatch to the Colonial Office, that two Americans who wandered upon West Falkland for fourteen months, lived upon the roots (probably the young shoots from among the roots) daily, and formed their huts of the cushion-like base, rolling one to the small doorway or opening when night came on.

The species of Phænogamic plants that came under the notice of the Botanist during the winter-months spent at the Falklands, are thus enumerated in his letter; the names being, of course, subject to future revision. The numbers correspond with those in the collection.

1. *Hierochloe* (*Melica Magellanica*, Des Rouss.) 2. *Agrostis*, 3. *Aira*. 4. *Gunnera Magellanica* (*G. Falklandica*, Hooker, Ic. Plant. t. 489, 490). The embryo has a superior radicle in a pendant seed. 5. *Portulaceous* plant, *Colobanthus*, Bartling and Endlicher, closely allied to *Spergula apetala* of Labillardière from Van Diemen's Land. 6. A magnificent *Carex*, the "false Tussack" of the Falklands, probably *C. trifida* of Cavanilles. 7. *Trisetum?* 8. *Gaimarda australis*, the natural order very doubtful. 9. *Triticum*. 10. *Arundo Alopecurus?* 11. *Agrostis*. 12. Ditto. 13. Ditto. 14. *Poa*. 15. *Festuca*. 16. Ditto. 17. Ditto. 18. *Agrostis*. 19. *Festuca*. 20. *Agrostis*. 21. *Empetrum rubrum*, "Diddie-Dee" of the colonists. 22. *Callixene marginata*. 23. *Arbutus* (perhaps rather a *Gaultheria) microphylla?* 24. *Nanodea muscosa*. 25. *Myrtus Nummularia*, used as tea. 26. *Crucifera*. 27. *Cardamine glacialis*, D.C. 28. *Arabis Macloviana*, of the Ic. Plant. t. 498 (*Brassica*, Gaudich.). 29. *Pernettia empetrifolia*. 30. *Atriplex*. 31. *Ranunculus*. 32. *Statice cæspitosa*, Poir. 33. A plant unknown to me, but found also in Kerguelen's Island. 34. A singular umbelliferous plant, having the fructification of *Hydrocotyle*, but with fistulose leaves.* 35. *Caltha sagittata*. 36. *Ranunculus hydrophilus*. 37. *R. biternatus*. 38. *Stellaria debilis*, Gaud. 39. Specimens of *Myriophyllum*, showing that *M. elatinoides* and *M. ternatum* are one and the same. 40. *Bulliarda moschata*, Gaud. 41. A *Scleranthaceous* plant (*Mniarum biflorum*). 42. *Chiliotrichum amelloides*, Cass. (Ic. Plant. t. 485). 43. *Ho-*

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* Probably a species of *Crantzia*, Nuttall, of North America, and identical with *C. attenuata* from Buenos Ayres (Hooker and Arn. in Contributions to a Flora of South America.—See Hooker, Bot. Misc. vol. 3, p. 346). I possess a third and very distinct species, from the Andes of Quito, sent by Dr. W. Jameson.

moianthus echinulatus (Ic. Plant. t. 491.). 44. *Abrotanella emarginata.* 45. *Nassauvia Gaudichaudii.* 46. *N. serpens.* 47. *Senecio vulgaris.* 48. *S. candicans.* 49. *Chabræa graveolens.* 50. *Aster Vahlii* (Ic. Plant. t. 486). 51. *Macrorhynchus? pumilus,* DC. 52. *Taraxacum.* 53. *Chevreulia lycopodioides.* 54. *Composita?* 55. *Baccharis 3-dentata.* 56. *Gnaphalium affine.* 57. *Senecio littoralis, var. lunatus.* 58. *Azorella lycopodioides,* Gaud. 59. *A. filamentosa?* (not of Lamarck, nor of Ic. Plant. t. 591). 60. *Bolax glebaria* (Ic. Plant. t. 492). 61. *Caldasia,* probably *Azorella daucoides* of D'Urville; but a true *Caldasia.* 62. *Celeri* (*Apium graveolens*). 63. An Hydrocotyloid plant, perhaps *Azorella Ranunculus,* D'Urv. 64. *Rubus geoides* (Ic. Plant. t. 495). 65. *Veronica serpyllifolia?* but the stem furnished with minute hooked pubescence. 66. *Caltha appendiculata.* 67. *Gentiana Magellanica.* 68. *Calceolaria Fothergillii.* 69. *Oxalis enneaphylla,* (Ic. Pl. t. 449); this is an esculent, its foliage, as that of *O. crenata* from Chili, makes excellent tarts and jellies. 72. *Littorella?* 73. *Rumex,* perhaps *Acetosella.* 74. A highly curious and I think new genus of *Cruciferæ,* with long funiculi to the seeds. 75. *Gunnera* (vid. No. 4). 76. *Viola maculata* (Ic. Pl. t. 499). 77. *Acæna adscendens.* 78. *Nerteria depressa?* but very different from the Bay of Islands' plant. 79. *Galium trifidum?* 80. *Primula,* not distinguishable from *P. farinosa.* 81. *Pratia repens.* 82. *Lysimachia,* probably *L. repens,* D'Urv. (Ic. Pl. t. 536); but this, again, is possibly too nearly allied to *Anagallis.* 83. *Acæna lucida,* var. pilosa. 84. *Sagina,* near *S. procumbens.* 85. *Arenaria media.* 86. *Cerastium viscosum.* 87. *C. lineare,* of Gaudichaud, if not of Persoon, but too close to *C. arvense.* 88. *Stellaria media.* 89. *Poa annua.* 90. *Carex.* 91. Ditto. 92. Ditto. 93. *Oreobolus obtusangulus.* 94. *Juncus grandiflorus;* the solitary-flowered species should form a separate group, (this is *Marsippospermum* of Desvaux, and Hook. Ic. Pl. t. 533). 95. *J. Magellanicus.* 96. *J. Scheuchzerioides.* 97. *Luzula Alopecurus.* 98. *Sisyrinchium filifolium.* 99. *Chloræa?* 100. *Eleocharis.* 101. Ditto. 102. *Astelia pumila.* 103. *Poa.*

104. *Tussack,* (*Dactylis cæspitosa,* Forst.) 105. *Gnaphalium consanguineum.*

" As the ships remained a few days at the Falkland Islands, after their return from Cape Horn, it is to be presumed that further additions were made to the collection, since the early summer was approaching; indeed, the botanist says, on one occasion : " I this morning took off my hat to the first flowering specimens of *Viola maculata* and *Calceolaria Fothergillii.*"

We have now only briefly to notice the botanical results contained in the latest and very recent intelligence that has been received from the " Erebus and Terror," namely a voyage, made from the Falkland Islands to St. Martin's Cove, Hermite Island, which lies westward of Cape Horn, which noted promontory they consequently had to double, now for the second time, in order to attain it. By the naturalist, indeed, this visit could not fail to be hailed with peculiar pleasure; for, although situated in a higher, or more southern latitude than the Falkland Islands (nearly 56° of south latitude), or, indeed, than any spot, yet explored by the expedition, possessing aught of vegetable life; yet it was well ascertained to be a forest land, and that this forest was composed of two species of little known, yet highly beautiful *Beech-trees,* the one having deciduous and the other evergreen foliage. A third and still more interesting evergreen tree (for a tree it may be called, seeing that it attains a height of 40 to 50 feet), is the once celebrated *Winter's Bark,* (*Drimys Winteri* of Forster). By its first discoverers, its virtues were highly vaunted; but soon the bark of *Canella alba,* being much more easily procured, was substituted for it, and our antarctic *Drimys* is now unknown in the practice of physic.

To accomplish this voyage, the ships, with a portion of the officers, left Berkeley Sound on the 6th of September, the spring of these southern latitudes, and arrived at their place of destination on the 21st of the same month. Hermite Island may be considered the most southerly spot on the globe where any thing like arborescent vegetation is to be found; and this circumstance is perhaps attributable to the proximity of the island, through the medium of Tierra del Fuego, to the southern extremity of the continent of America, which abounds in forests, the seeds from which may have been carried by birds, or wafted by winds and waters. The particulars of the peculiar productions of this country have not yet been transmitted; for the latest accounts were written soon after the return of the "Erebus and Terror" to the Falklands, on the 13th of November, and the time destined to examining and determining the specimens was during the ensuing third voyage to the ice; but the following hasty list of the phænogamous plants, gathered during their brief stay, has been communicated.

"1. *Misodendron punctulatum,* Banks; but the character of the fructification is at variance with that of Pöppig in Endlicher's Genera. 2. A most curious little *saxifrageous-looking plant* and with the habit of *S. bryoides;* the leaves are singularly bicuspidate, the fruit is superior, 2-celled and has two styles; yet it does not look like the capsule of a Saxifrage. 3. *Statice,* on the hills, where the snow has just left the ground. 4. *Scleranthea?* probably a *Mniarum.* 5. *Pernettia,* which ascends to the tops of the hills, 1750 feet. 7. Something quite new to me, not found in flower, but it has since shown blossoms in the Ward's case,—not yet examined. 8. *Azorella.* 9. *Composita?* 10. *Abrotanella.* 11. *Azorella lycopodioides.* 12. *Festuca.* 13. *Empetrum rubrum.* 14. *Carex,* very small. 15. *Caltha,* or an allied genus, near *C. appendiculata;* the leaves 2-lobed, lobes incurved and conduplicate, and fringed at the margin, reminding me of the leaves of *Dionæa;** there are, besides, the same little ear-like appendages at the base. 16. *Misodendron,* in flower, different from No. 1, having three stamens instead of two. 17. *Caltha appendiculata.* 18. Our poor friend Menzies'* '*Viola 3-dentata.*' 19. Several forms of *Arbutus* (Pernettia) *mucronata,* for it is a very variable plant. 20. *Azorella.* 21. *Oreobolus obtusangulus.* 22. *Veronica decussata.* 23. *Gunnera,* the same as the Falkland Island species (*G. Falklandica,* Ic. Plant. t. 489, 490). 24. *Myrtus Nummularia.* 25. *Juncus.* 26. *Sisyrinchium?* very

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* In my Herbarium are specimens of this plant from Forster's Collection, given me under the name of "*Oxalis Magellanica,*" Forst. Imperfect as is the description of *O. Magellanica,* it is quite impossible it can apply to this plant, which belongs to the same group of *Caltha* as *C. appendiculata* and *sagittata,* so far as the appendages to the leaves are concerned; but these leaves are, otherwise, highly curious. The plant appears to grow in dense tufts, 2-3 inches high, thickly clothed with leaves and sheathed by the exceedingly large membranaceous stipules, two or three

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times the size of the leaf itself; they are petiolated, and at first sight might be taken for the closed leaves of *Dionæa!* being orbicular, fleshy, deeply cut into two parallel lobes, which are fringed at the margins, and folded the one upon the other, exactly as in the well-known *Fly-Trap* of America. On these lobes being forced back, however, they are found to enclose the two curious appendages of the base (like those of *Caltha appendiculata.* See Delessert's Icones, v. 1, t. 43. and *C. sagittata.* See Cavanilles' Icones, t. 414), notwithstanding that these lobes are themselves almost as large as the leaves; so that, when opened, the leaves are in reality 4-lobed, the lesser ones closely applied or folded upon the face of the larger ones, and these two folded again laterally upon themselves. The smaller lobes, or appendages, as well as the larger ones, are equally beautifully ciliated, and the inner faces of all are, besides, concave and minutely papillose. I shall propose for this plant the name of

Caltha (Psychrophila, DC.) *dioneæfolia;* minuta, densissime cæspitosa, ramosa, foliis petiolatis orbiculatis carnosis bilobis lobis conduplicatis appendiculisque appressis pulcherrime setoso-ciliatis intusque minutissime papillosis, stipulis membranaçeis maximis, pedunculo unifloro vix foliis longiore, sepalis 5 ovato-oblongis, staminibus 5-9, ovariis sub-3.

HAB. Tierra del Fuego, *Forster.* Hermite Island, at the southern extremity of Tierra del Fuego, *J. D. Hooker.*

* It was only on returning to the Falklands from Cape Horn, and just previously to writing the above, that Dr. Hooker had received intelligence of the death of his venerable friend Mr. Menzies, for whom he, in common with all those who knew his worth, entertained a great affection. Many notices of the stations of rare plants in distant regions did Mr. Menzies give to our young botanist before his embarkation, and the news of the decease of such a friend could not fail to touch him deeply, while traversing seas which had been visited by that amiable man fifty years before, when on his voyage round the globe with Capt. Vancouver.

small and curious, with singularly compressed fruit.* 27. *Colobanthus?* 28. *Plantago.* 29. *Deciduous Beech* (*Fagus Antarctica* of the London Journal of Botany, v. 1, t. 6), fl. ♂. 30. *Acæna.* 31. Variety of *Caltha sagittata.* 32. *Cerastium.* 33. *Primula,* probably identical with that which is found in the Falkland Islands. 34. *Juncus grandiflorus.* 35. *Graminea.* 36. *Drimys Winteri;* the wood of this tree has a glandular tissue, as in the Pines, and the genus *Tasmannia.* 37. *Berberis ilicifolia*). 38. *Berberis* (with foliage quite entire, as in *B. microphylla,* Forst., but verrucose flowers, like those of *B. ruscifolia.* 39. *Escallonia serrata* (Ic. Plant. t. 540). 40. *Haloragea.* 41. *Bulliarda.* 42. *Ericacea,* but undetermined; habit like *Pernettia,* but fruit a dry capsule, and the calyx wholly inferior and not in the least fleshy. 44. *Donatia Magellanica.* 45. *Pernettia.* 46. *Composita.* 47. *Nanodea muscosa.* 48. and 49. *Compositæ.* 50. *Thalictrum?* 51. *Fagus Forsteri* (London Journal of Botany, v. 2, t. 8) ♀. Probably among the specimens there may exist the *F. betuloides* of Mirbel (Mém. du Mus. d'Hist. Nat. v. 14, p. 469, t. 25, Pl. 6 in text, and *F. dubia,* Mirb. in the same work, and vol. Pl. 471, t. 26, in text, Pl. 7; which that author himself believes to be only a variety of *F. betuloides,* and there is good reason to believe this is identical with the *F. Forsteri,* or *Betula Antarctica,* Forst.). 52. —?. 53. *Ranunculus biternatus.* 54. *Pinguicula!* one specimen only with fruit, and a withered corolla upon it. 55. *Leptinella?* 56. *Galium.* 57. *Oxalis.* 58. *Drosera.* 59. *Cardamine.* 60. *Apium.* 61. *Chiliotrichum.* 62. *Azorella filamentosa.* 63. *Pratia?* 64. *Acæna?* 65. *Gunnera.* 66. *Cineraria leucantha?* 67. *Cineraria?* 68. *Tussack* (*Dactylis cæspitosa*) in full flower. 69. *Graminea.* 70. *Uncinia.* 71. to 76. Different Grasses, with only the withered remains of last season's flowers. 77. *Torresia.* 78. *Triticum.* 79. *Gaimarda Australis.* 80. *Astelia pumila.* 81. *Tetroncium Magellanicum* (Ic. Plant. t. 534). 82. *Oreobolus.* 83. *Callixene.* 84. *Juncus.*

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* This was found by Mr. Wright in the Falkland Islands.

"The *Cryptogamiæ* are far more numerous, and I have paid particular attention to these, because others Naturalists can collect phænogamous plants, while few will be disposed to devote that minute attention necessary for the investigation of this Class. It has been an object with me to gather as many species as possible of each Natural Order, being extremely anxious to ascertain the proportion which the Natural Orders bear to each other in their respective Antarctic longitudes, and to each other in their own localities: as a matter of primary importance in the elucidation of Botanical Geography, and as evincing the effects of climate upon the Vegetable Kingdom, several of the tabular results I have already hastily drawn out show a delightful accordance; nor do I know of any result of this expedition which has given me so much pleasure as to find how beautifully certain groups rise in the scale as we proceed south, proving the accuracy of the learned Mr. Brown's views. As we advance in the Antarctic Regions, *Fungi* disappear and *Lichens* increase. Among the *Mosses* the *Pleurocarpi* diminish in proportion to the *Acrocarpi;* as does the relative number of *Pleurocarpi* which bear fruit, to those which are barren; *Cyperaceæ* decrease, and *Dicotyledones* bear a smaller proportion to the *Monocotyledones.*"

Our latest tidings of the Antarctic Expedition were dated the Falkland Islands, Nov. 30th; about a fortnight after its return from Hermite Island, and on the point of proceeding, as was expected, again to the south, in Weddell's track; there, we trust, to visit some of the New South Shetland group, where a Grass (*Aira Antarctica*) published by us in the "Icones Plantarum," was found, and which is perhaps the most southern phænogamic plant yet known to us. Previous, however, to the departure of the "Erebus" and "Terror," two very large Wardian cases were despatched to the Royal Botanic Gardens of Kew, filled with plants, the one the productions of Hermite Island, Cape Horn; the other containing the plants of the Falkland Islands, which latter was filled by the kindness of Mr. Lyall of the "Terror."

The boxes encountered a most stormy passage, but it is with infinite pleasure I can state that several of the most interesting among the plants have arrived in good condition, and bid fair to prove great acquisitions to our Gardens, and I trust I may say to our Forest Scenery; for among those that have reached their destination in the best state, are healthy young trees of the beautiful Evergreen Beech (*Fagus Forsteri*), the Deciduous Beech (*Fagus Antarctica*), and the Winter's Bark (*Drimys Winteri*). So far as I know, the two first of these have never been introduced alive to this country, before; while the latter is so rare that, I believe, previous to the present importation, the only plant of *Winter's Bark* that existed in Europe, is the fine specimen, 12-14 feet high, in the Royal Botanic Gardens of Kew. Now, all these and several herbaceous plants in the Collections, such as the *Gunnera Falklandica, Caltha appendiculata, Berberis ilicifolia* with its fine holly-like leaves, as the name imparts, and with flowers larger than those of any known species of the Genus, *Pernettia, Lomaria Magellanica, Asplenium Magellanicum, &c.* promise to do well. Many other plants had been placed in the Cases, but did not survive the voyage: as young plants of the *Tussack*, a great number of the fine *Mosses* and *Jungermanniæ* of Tierra del Fuego, especially the noble *Polytrichum dendroideum;* these all perished. Already the duplicate living specimens are dispersed, far and wide, among the many friends of the Royal Botanic Gardens, and every exertion will be used by the recipients, and by ourselves; to increase the stock of these interesting strangers. It is to be lamented that the season of the year (winter) did not allow of perfect seeds of the *Tussack* being sent; but the Governor, in his letter to Lord Stanley, has promised to collect and forward ripe seeds, and has suggested that the Grass is worthy of trial, not only on the coast, but even in an inland situation, such as Chat-Moss; and the success, which has attended the germination of the seeds in Governor Moody's garden in the Falkland Islands, is certainly encouraging.

Although, as already noticed, our letters from the officers of the expedition bear date only to Nov. 30th 1842, we have received information by a more recent arrival from the Falklands, that the Erebus and Terror did not proceed to the south till after the first week in December, when, summer having commenced, we may confidently hope that the Botanists reaped a good harvest of flowering plants. It is believed that it was Capt. Ross's intention to proceed in the direction of Capt. Weddell's route, in order to verify his statements: in which case there exist many interesting groups of Islands in the way, which we trust will be visited. What success may have attended the navigator's approach to the Pole in that direction it is vain for us to conjecture. Of one thing we feel sure that the gallant commander will perform all that a British navigator can do, and that the same spirit animates every officer and seaman attached to the Expedition. Should no further discoveries be made than have already been effected by this Voyage, yet these, we have reason to know, when the results shall be published, cannot fail to add to the glory of this nation, high as it already stands, in all that concerns maritime discovery and scientific research.

Royal Botanic Gardens, Kew.
May 25, 1843.

While correcting for the press the last sheet of the above notes, the joyful news has reached England of the safe arrival of the Antarctic Discovery Ships at the Cape of Good Hope, on the 4th of April, after a third cruize in the dreary South Polar Regions, where they were brought up on the 5th of March, 1843, by the heavy Pack ice, in lat. 71^0 30′, long. 15^0 W. This point was a few miles to the south of any previous navigator but Weddell (themselves excepted), and, several degrees* nearer the South Pole than had been attained by the brave but unfortunate D'Urville, during his attempt to follow in the same (that is Weddell's) track.

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* The only account within my reach of the last Voyage of D'Urville (*the Expedition of the Astrolabe and Zélée*) is given in a volume published at Paris, 1843, entitled "*La Polynésie et les Isles Marquises.*" There it is stated that "the two ships," just mentioned, were at Port Famine, Patagonia, and as the month of December had arrived, it was high time to proceed towards the Pole. Weddell was the individual whose steps they

wished to follow. Cook, in 1775, had met with ice in the 60th degree; Powell, in 1721, had been unable to proceed beyond 62; Biscoe had attained 63 with difficulty, while Weddell declared that he found open water as high as the 71st degree. The ships accordingly sailed in that direction and through smooth seas; but, on the 18th of January, an iceberg eighty feet high, was suddenly seen ahead of the *Astrolabe*. These floating masses became more and more numerous, and on the 22nd, in lat. '*about*' 65 degrees, an immense barrier was descried stretching all along the line of horizon. It would be difficult to conceive the magnificence of this threatening spectacle; in which the eye continually seems to descry some striking work of architecture; as gothic cathedrals of the richest sculpture, or groups of glittering obelisks and temples gigantic as those of Ellora, or perhaps vast quarries of sparkling marble, or an immense city, bristling with edifices, all as if viewed through the vapory and confused mist of dawning morn.

"Had not this scene been replete with perils, the eye might have dwelt upon it with delight; but the danger was too pressing, with the foe in full view. For several days, the ships coasted this eternal wall, in hopes of detecting some aperture, and every where it presented the same firm and formidable appearance. Many times the ships were entangled amid enormous glaciers, till on the 3rd of February, a barrier, 200 toises broad, cut off their return to the open sea. What was the terror of our crews, and how earnestly did they labour to extricate themselves with levers, saws, and hatchets! By dint of ropes and manual exertions, the ships were, in five days, hauled into a narrow lane between the icebergs, and the wind becoming favourable, they hoisted all sail and made a final and successful effort; and alternately pushing and being pulled, though at the risk of flying into a thousand shivers, they gained the open water. Thus safe, though much damaged, the vessels escaped from a week of appalling confinement.

"This convincing proof seemed to forbid any exposure to new perils *on the faith of Weddell*. But loth to quit these latitudes with only disappointment, M. D'Urville pursued the line of the barrier for three hundred miles, and only quitted it when accumulated ice blocked up his passage. He then returned upon the Orkneys and the eastern shore of New South Shetland, completing their geography; and being anxious to ascertain the true nature of those snowy peaks to which whalers had assigned the names of Palmer's Land and Trinity, and which had also been variously called by Forster, Biscoe, and Morrell, he made for these

A brief sketch of this last cruize will be the more interesting, because, on this occasion, probably owing to the frequent occurrence of islands, and the comparative proximity of the South American continent and the Falklands, vegetation, such as it is, and requiring almost the eye of a botanist to descry its existence, was detected in latitudes far more southerly than during either of the two previous voyages.

The Expedition quitted Berkeley Sound, East Falkland, on the morning of the 17th of December, 1842, and making all sail, ran to the southward, with fresh breezes, gales, and much misty, foggy weather, till the 24th, when the position of the ships was a little eastward of Clarence Island, though the thick atmosphere prevented the land being made. On that day the navigators fell in with the first berg and much rotten ice, and saw some birds, the white *Chionis* of the Falklands, which are always a sure sign that land is near. On Christmas day, the same cheerless weather prevailed, though it must be remembered that the 25th of December is the midsummer of the Southern Hemisphere: snow-squalls and furious winds from the S.W. assailed them; but the evening becoming clearer, many icebergs were discerned, and the first *White Petrel* gave intimation that the Pack-ice was at hand,

little known points. Approaching the land in a different direction from any previous navigator, our French commandant explored it for a hundred and twenty miles, between 63 and 64 degrees south and 58-62 degrees west of Paris; and found its coast everywhere crowned with numerous peaks, and covered with unmelting ice. To the largest portion of land was assigned the name of Louis Philippe; the smaller ones received various appellations. During the progress of this fatiguing service, the season became late, and scurvy having seized the crews, it was necessary quickly to quit these dreary regions, and regain one of the ports of Chili. When the ships reached Conception, forty men on board the *Zélée* were unfit for service; and though only fifteen were sick in the *Astrolabe*, yet the disease was making progress, and the Commandant himself began to show symptoms of it. Careful medical treatment, a salubrious regimen, and the air of land, quickly banished this scourge, and brought health back to the countenances of the navigators, so that when they cast anchor in the Bay of Valparaiso, the number of scorbutic individuals was reduced to three."

for these beautiful birds are never seen away from the immediate edge of the Pack; and the ships accordingly fell in with it the same night. First passing through some heavy streams of ice, they made the Pack, running east and west, very heavy and formed of large pieces of rotten ice. Many bergs were floating about, apparently quite out of their element (if such an expression is allowable), for they were much broken up, and partially melted, looking very different, indeed, from the huge, hard, tubular masses which the navigators had been accustomed, during their two previous cruizes, to meet with. The fogs continued so dense, that, though the surf was heard dashing over the ice, and thus apprizing the voyagers of the proximity of danger, it was impossible to see anything. On the 28th, the icy hills of Palmer's and Louis Philippe's Islands were announced by the increasing coldness and clearness of the air, and several large barrier bergs, and much loose ice, floated in all directions. Many birds, large Finner Whales, and shoals of a smaller species, speckled black and white, were observed; and what deeply interested the botanist, as occurring in such a high southern latitude, the ships passed two much battered patches of *Sea-weed*, apparently belonging to the genus *Macrocystis*, but which it was impracticable to pick up. The land came in sight that evening. It is described as consisting of low hills, nearly covered with snow, with several islands lying off it, and terminating to the northward in a bluff, which is both further to the southward and eastward than the Pointe Française of D'Urville. The aspect is by no means fine or imposing, the land being low and of a rounded outline, apparently but a few hundred feet high, partially bare of snow, and presenting huge glaciers here and there. Icebergs were very numerous, often blocking up the view of the horizon, and the sea was full of loose ice, much of which was stained brown, with those infusorial and confervoid remains, found abundantly by former navigators.

Many seals and penguins frequented the ice in this place, and the "Terror," passing several islets on the coast, was enabled to pick up a piece of sea-weed, which the surgeon of that ship gave to the botanist on board the "Erebus," by whom it was ascertained to be a singular new *Sargassum*, analogous to, but distinct from, a species previously found on Lord Auckland's Island; and he thus describes it:—"Frond pinnatifid, its segments 1½ inch long entire round, vesicles axillary solitary, and the diameter of a small grape, receptacles crowded together, shortly pedicellate axillary. Colour chocolate brown. Length 3 feet, sparingly branched. Dissections of the receptacles are made from the recent plant, and will be sent home." This sea-weed is probably allied to the *Fucus decurrens*, of Turner's *Historia Fucorum*, and is mentioned by Webster in the Appendix to Forster's Voyage,* under the head of Deception Island, one of the South Shetland group.

Two days were spent in endeavouring to get down to the south-eastward, but snow-storms and heavy Pack-ice rendered this hope fruitless, so that on the 30th, the "Erebus" bent her best bower cable, and bore up for the land again, which was approached somewhat to the south of where they had neared it, four days previously. The mountains were here of greater elevation, with several peaks, which were calculated at about 3,000 feet high, and all apparently of volcanic origin, though not active at the present day. Enormous glaciers might be seen, running along some parts of the coast for many miles, terminating towards the sea in icy precipices. On the little islands near the land, the snow was often melted; and though low, many of them presented remarkable craters, with numerous and very large icebergs floating round them. Several gulls, terns, cormorants and other sea-fowl were noticed here.

The last day of 1842 was fine and clear, enabling the voyagers to steer to the southward, through openings in the ice, with a strong tide or current, and in the evening they descried a most singular crater-shaped, conical island, to the south-west, backed by what appeared to be other low islands, all quite bare of snow, and these again, surmounted by many mountains of considerable elevation and tabular form, covered with snow and ice. What seemed separate islands, however, proved a continued land; and as it was thus impossible to be penetrated, the ships lay-to, among very thick ice; and to their disappointment, were wafted northward, along with the surrounding bergs, by a tide (?) which required all their efforts to resist, and to maintain their position.

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* "The *Fuci*, or *Sea-weeds*, were few and unimportant; the most common was found floating. It was of a pale chocolate colour, stem and branches flat, &c. The mode of reproduction appeared to be from a cluster of buds, appended to the terminal branches."—Forster's Voyage, vol. ii, Appendix, p. 301.

New Year's Day was also fair; the ships were then in lat. 64° 14′, long. 55° 54′, and lying off the above-described land, which forms a deep bight, in which is situated the small conical island. The coast trends from South to E.N.E., and ends in a bluff point, covered with little extinct craters, and bare of snow. Many stupendous icebergs, of a tabular form, and from 2 to 5 miles long, formed a kind of chain from the point of land, all aground, and doubtless retaining the Pack in its place, like so many firmly-fixed piles. On the 2nd of January, the Pack closed upon the ships, which were accordingly made fast to a large piece of ice, with the view of preventing pressure and keeping them from drifting too far. The Floes were large, and much more like hummocks in their character than is general, appearing as if they had been broken up and consolidated again, full of holes, and covered with soft treacherous snow. Many birds were hovering about the ice, and among them, a few King Penguins, weighing 60-70 pounds, with *Hawk-Gulls*, *White Petrel*, and four or five other species of *Petrel*. A heavy northerly gale came on the next day, accompanied with mist and snow, and the ships cast off from the floe and got into a little pool of water, in which they beat about among ice, their object being to gain the bight, and the small crater-shaped island, which they were enabled to do on the 6th, when the weather again became clear, and the sun, to their great delight, shone forth. The botanist landed on the little island, and found it a most singular spot. He gathered upon it what he calls the ghosts of 18 cryptogamic plants, but there appeared no trace of phænogamic vegetation; and except one or two of the *Lichens*, all the species were extremely scarce. Of *Mosses* he found four kinds, one coming into fruit; and eight *Lichens;* among them, a *Parmelia*, the rest being crustaceous, except a *tremelloid* one; a green species of *Protococcus*, and *Ulva crispa*, apparently identical with the European species found in Ross's Islet, as stated in the list of Captain Parry's plants: thus, unless the *Red-snow*, spoken of by Forster, should prove the real so named, plant of the Arctic regions, this *Ulva crispa*, with *Desmarestia aculeata* also gathered, are the only vegetable productions common to both extremities of our globe, and it would be interesting to ascertain what are the intermediate countries which they inhabit. *Asperococcus bullatus ?*, or a very nearly allied species, identical with what is found at Cape Horn, with the remains of an *Iridæa*, (also a Falkland Island species, *I. micans ?*) and an *Oscillatoria*, or *Calothrix*, complete the list. The Botanist says, that though his specimens, the best which circumstances enabled him to procure, are but such poor scraps, that it was almost difficult to identify them, yet he felt it a great consolation, after so long a cruize, to gather any plants in regions far more southerly than vegetation had been supposed to inhabit. "I have prepared," he writes, "drawings of all the plants, one is a very beautiful and scarce little *Lichen*, a *Parmalia* of a golden yellow colour, with black scutella, which I should like to name after my kind godfather.* The *White Petrel* breeds in the cliffs, and there was a large colony of *Cormorants* and *Penguins* near the sea. I collected specimens of these birds and their eggs; also of the rocks, and of every thing I could find, without taking my eyes off the plants. I ascended the hill as high as was possible, but could not reach the summit, for we were only allowed three hours upon the island, and I dared not waste time in making such attempts. As it was, we were not half sufficiently long there to accomplish what I could have wished, for the difficulty I experienced in detecting any vegetation at all, convinces me that much may have eluded my researches, and that perhaps double as many plants might have been gathered, if I could have staid to seek for them. The *Sargassum* above-noticed, does not appear to grow on the shores."

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* Little aware that the decease of this estimable man, and elegant scholar, the Rev. Jas. Dalton, late Rector of Croft, in Yorkshire, like that of the venerable Menzie, had recently taken place. Mr. Dalton paid particular attention to the *Lichens*, as well as to the *Mosses*, though he was well acquainted with phænogamic botany, and with the *Carices* in particular.

The afternoon of the day during which this island was visited found the officers and crew with the less agreeable employment of towing the ships off the land, by the help of all their boats, for the winds were so light and the tide ran so strong, that it was difficult for the vessels *to hold their own.* At night a fresh breeze springing up, enabled the navigators to steer for the point of land before mentioned, and to pass with difficulty through the very narrow channel, which separates this promontory from the chain of icebergs. This land proved on near inspection, to be an exceedingly slender cape, bare of snow, with steep banks dipping down to the sea, and full of extraordinary cracks and fissures, with its top covered with little cones and craters, apparently formed of a mass of light brown volcanic mud, which had cracked while in the process of induration and through which the vents had protruded. Or possibly, this land might be composed of a mass of scoriæ, ejected from the little craters, which has been worn into perpendicular escarpments towards the sea, by the action of the tides, and the fissures are caused by the snow melting. The voyagers were much struck by the singular aspect which these isolated pieces of land, quite bare of snow, as of vegetation, yet so very near an ice-bound continent, present. The weather continued so thick for three days, that the two ships were only enabled to keep company by firing guns and beating gongs, &c. On the 9th, as the gloomy atmosphere and the ice, closing round, rendered voluntary progress impossible, and the tide drifted the " Erebus" towards a large stranded berg, the boats were lowered and she was towed off, and after running between two icebergs, she was made fast to a large floe, her position having, even then, to be constantly shifted as the ice turned round. This state of things continued till the 11th, when they cast off from the floe and made for a space of clear water between the Pack and the land, which they reached and then observed a barrier of ice or glacier, presenting a wall which much resembled, though it was on a smaller scale, the barrier twice encountered by the Antarctic expedition in lat. 78°. It is described as meeting the steep shore quite abruptly and running back in a slanting line to the loftier land and mountains, forming a sloping wall, perhaps 70 feet high. The bergs which are seen in its vicinity, cannot have formed a portion of it and been broken off, as they are considerably loftier than itself and aground much further from the shores. Far as the eye could reach, this glacier skirted the coast to the south east, the tide running very strong at its base and coloured of a burnt sienna hue by the infusorial and confervoid substance. On the 13th, at 2 P.M., the tide hurried both ships among the lee-ice, (or ice lying to leeward), a most troublesome and unfortunate circumstance, for the ice is, of course, much heaviest and most closely packed to leeward, and when once a ship gets entangled with it, she cannot sail out. The only mode of extrication by which a vessel can regain the open water to windward, whence she came, is to warp out, by fastening lines to the hammocks on the ice, and bringing them to the capstan, gradually, against both wind and ice, heaving her ahead between the pieces. Several warps require to be out, from different parts at a time, and are hauled on, or brought to the windlass, capstan or winch, according to circumstances. All hands, on board must strain at this work, which cannot be pursued if there is much wind. As it was, five minutes sufficed to carry the " Erebus" into the lee ice on the 13th of February, and three hours were required to get her out again. The " Terror," being a quarter of a mile farther in, was not clear till next morning, all her men, of course, on deck, and fourteen hours of severe labour were spent in extricating her from this dangerous situation. The same scene of labour and peril was repeated the next two days with increased detention.

But so continued and so fatiguing were the baffling difficulties with which, day after day, and often during many nights, the persevering commander of the expedition and his officers were tried, that we cannot continue to particularize them, and shall sum up their month of January of this year (equivalent to our July) by saying that the time was spent, generally near the Pack edge, in fruitless endeavours to proceed towards the south; sometimes beating about in little pools of water, and sometimes made fast to floes, with the agreeable diversity of weather afforded by gales of wind, snow-squalls, fogs and misty rain. If they endeavoured to penetrate the pack, which barred their southerly progress, they were beset with the ice and lost much time in getting out, and if they bore away, then the current and the course of the floating bergs took them to the north, the direction which of all others they sought to avoid. On the 4th of February a heavy swell from the north-east indicated the proximity of clear water and by dint of tacking and boring, they cleared the loose ice, and hoped, by going rapidly to the east, to reach Weddell's track, which Captain Ross trusted to find either quite open, or but little intercepted by ice. The prevalence of westerly winds in these latitudes favoured this supposition. But, as if to disappoint their main object, the expedition was now doomed to encounter such a succession of easterly gales, right in their teeth, as they had never met with in all their previous experience of Antarctic navigation. The build of the "Erebus and Terror," which one of their officers term "our round-nosed ships," was peculiarly unfavourable to making way against head-winds, and when they had obtained a latitude, but a few miles to the south of where D'Urville had been foiled, they found the same heavy Pack-ice blocking up Weddell's homeward passage. Already the increasing darkness of the night, forbidding any progress during those hours of obscurity, rendered it impracticable to enter the Pack-ice, even had it been slack enough for them to do so; and the Captain had, therefore, no choice but to follow the edge of the Pack, keeping, if possible, to the southward of the French track, and wherever an opening might present itself, he intended to attempt following it in the direction of the Pole.

Until the 22nd, the Pack was accordingly traced, but on the next day, the ships lost sight of it; and glad to be making any way to the south, they joyfully began running S.E. in clear water, with bergs only, and no Pack-ice in view. For, though the rapidly lengthening nights, and the absolute necessity of risking navigation in the dark, if any progress at all was to be made, were enough to daunt the courage of those who knew something of the dangers which beset these dreary seas, yet such was the reluctance of Captain Ross and his officers to give up before accomplishing all they wished, that, even at this late season of the year, they persevered in pushing onwards. On the 28th of February they re-crossed the Antarctic Circle, after having experienced another month of most unfavourable weather; for, except one day, it had snowed more or less throughout the month of February, and the sky was constantly obscured with clouds. The temperature, during this high summer of the South Polar climes, varied between 27° and 35°. When the wind blew from the north, coming over the warmer ocean, it invariably brought a thick and foggy atmosphere, the warmer vapours being condensed by the colder sea in this latitude. To this weather the Antarctic Regions are always subject. No great extreme of cold is experienced during summer, and still less any heat, either in the air or the sun's rays, intercepted, as these latter constantly are, by the fogs. The weather is never genial, and the moon and stars rarely, if ever, appear at night, when darkness comes on: probably no climate can be more uncongenial to vegetable life, or to what may be termed the *enjoyment* of human existence either. To add to these discomforts, once a week on an average, gales of wind are sure to blow, and then, when the ships are in open water, the heavy seas are such as to forbid anything being done with comfort, as the vessel rolls, her bulwarks under water, and all hatches battened down.

Thus time wore on, in fruitless labours, till the 3rd of March, when that rare event, a calm, took place, enabling Capt. Ross to sound, or rather to try for bottom, with 4000 fathoms (24,000 feet) of line. It consisted of 250 fathom of 1-inch rope, and 3,750 fathom of ¾ inch, with a weight of pig iron of 1 cwt.

On the 5th the weather became very thick with snow-squalls, and many Petrels and much berg ice were seen. In the afternoon of that day, the ships again met the Pack-ice, and bore up in lat. 71° 30′, among the ice, which was very heavy, stretching in every direction far as the eye could reach. The rapidly falling barometer also indicated a gale, which was the more to be anticipated as the wind had been tolerably moderate for three or four days; and since the proximity of such tremendous masses of ice was very dangerous in the event of a storm, the ships hoisted a press of sail and endeavoured to clear the Pack and icebergs, which the falling snow rendered it difficult for them to descry and avoid. On the 7th, the gale and the snow-squalls continued, and the most intense anxiety prevailed, because of the masses of ice which floated all around. The "Erebus," too, was clogged in her movements by her consort, the "Terror," a much worse sailer, which was very heavily pressed at all to keep up, as the former went diving and tearing through the water. Yet to have parted company might have caused the destruction of one or both vessels and their noble crews. No alternative remained but to quit these fearful regions, and, accordingly, on the 9th, the ships were finally put about. At this time, night commenced at 8 P.M., and dawn at 4 A.M., and when there was a moon, the state of the atmosphere prevented its showing any light.

On the 11th of March, the Antarctic Circle was recrossed; and the navigators began a rapid northerly passage, amid many very large icebergs, which it required incessant caution to avoid. On the 16th, the moon was seen for the first time during many months.

The course was now directed towards the land, laid down in the charts as Bouvet's Island, or Cape Circumcision, discovered by a French captain, Bouvet, about the middle of the last century, and ineffectually sought for by Captain Cook himself, and by the ship which separated from him, and was commanded by Captain Furneaux. The masters of two of Enderby's ships, the "Swan and Otter," are said to have seen this land in 1808, and they describe it as high, completely covered with snow, and unapproachable for many miles, because of the Pack Ice.

On the 19th, in lat. S. 54° 31′, long. W. 2° 25′, a heavy southerly gale came on, accompanied with gloomy snow showers. Passing among Icebergs, they approached the position assigned to Bouvet's Island; but the thick weather, and tremendous surf running, prevented the possibility of descrying any thing. At midnight the "Erebus" passed immediately to windward of a large mass of ice, and struck against a smaller piece, supposed to be from a berg close by. It was afterwards discovered that the "Terror" had come suddenly on an iceberg at the same time as the "Erebus," but happily saw the danger soon enough to bear up, and then ran close to the surf, which was beating over all within a half a cable's length of the cliff. The light of the "Terror" had been observed to shoot a-head of the other ship, and though the reason of this manœuvre was not visible, yet it was rightly guessed to proceed from the vicinity of extreme peril. To have remained longer in such a situation, with the view of seeking for land of but doubtful existence, would have been madness; and Captain Ross, assured that he must have passed close to the position assigned for it, gave orders to bear away for the Cape of Good Hope. The tremendous gales before which the Discovery Ships now ran were only uncomfortable, for the construction is such, that in open water, where there are no icebergs, no seas can possibly, humanly speaking, harm them.

On the 24th, in latitude, 50°, 30′, two patches of the *Laminaria* were observed floating, but the state of the sea rendered it impossible to pick them up. The eyes of the voyagers were greeted on the night of the 27th with the sight of the stars, which had not appeared since the ships had left New Zealand, in November 1841. Such is the climate of the cheerless regions of the southern hemisphere! The Botanist writes, on the 24th of March, "I am just called on deck, for the captain has been sounding for temperatures at various depths, and has brought up a stock of the *Laminaria*, which I believe to be the same as one of the two species from Cape Horn. Like the *Sargasso weed*, this *Laminaria* grows and increases at sea. The Stem (the root is gone) is cylindrical, and about 6 inches long; lamina not bigger than one's hand, divided into twelve laciniæ, 6-14, and even 20 feet in length, plane, varying in breadth from 2 inches to a foot, very coriaceous, composed of a cortex of dense and, when dry, horny tissue, and a single row of horizontal cells of very large size. Colour olive-yellow, olive-brown, or green, the older portions thick, wrinkled, and dark, the younger parts brighter yellow, and slender, more tender and flatter, none of the apices entire. The southern *Laminariæ*, which, being among the giants of the acquatic vegetable kingdom, ought to be well known, appear almost entirely misunderstood. This plant, for instance, which I believe to be the *Laminaria*, or *D'Urvillea, utilis*, referred to the *Laminariæ* both by Greville and Endlicher, certainly does not agree with the characters laid down by the former author, (vide p. 24 of his *British Algæ*). A sketch, which I made of it at Cape Horn, shows the sporules to be contained in distinct receptacles, embedded in the cortical substance, and appearing, on a transverse section, like a string of beads immediately under the surface; they open by pores and emit a mass of mucus, with spores most distinctly furnished with a pellucid limbus. These receptacles are scattered by thousands in the surface or cortical layer, and when their contents are ripe, they stain the hands of a rich brownish-black. As the weed dries, the contraction of the tissue expels the spores and mucus; which, on hardening, form myriads of little black tubercles on the surface; and then alone is the fructification conspicuous. All this is precisely as in *Himanthalia;* except that the central substance of this plant consists of large transverse cells. Greville, quoting Bory in confirmation, calls a part of the stem of the latter *fronda,* and the thongs he considers as *receptacles:* but, as far as I can see, his receptacles are precisely analogous to the laciniæ of the *frond* of this *D'Urvillea,* (or *Laminaria,* whichever it may be). Further, I suspect the frond of the *Himanthalia* to be an abortive bladder, analogous to the trumpet of the *Ecklonia buccinalis;* for Greville says the fronds are, at first, cylindrical and pear-shaped; then they fall in, and become plano-concave. Not being familiar with the structure of the British, or true species of the genus *Laminaria,* I cannot tell whether the *D'Urvillea* in question should belong to *Fucoideæ,* or *Laminariæ:* but assuredly, so far as published characters avail, to the former.

"When we reach the Cape of Good Hope, it is my intention to seek carefully for seeds of *Ecklonia*; for I incline to believe that, together with *Himanthalia* and *D'Urvillea,* it will form a very pretty group of *Algæ.* If the thongs of *Himanthalia* are receptacles, so must the laminæ of *D'Urvillea* be; but I can see no reason why either should be considered as such. The sporules and their cells are quite analogous to those of a *Fucus* or *Sargassum,* where they are contained in what are undoubtedly receptacles. Thus the transition will be very simple, through *Ceystosria* and *Halidrys,* where the leaves are gradually transformed into pods. This weed was much infested with barnacles."

On the 30th of March, the ships were fast approaching the Cape of Good Hope, with a mild air and soft wind. The whole time occupied in the last cruize, was spent in such tempestuous latitudes, and among such icy seas, that nothing new in the way of Natural History could be discovered; and accordingly, our young natuturalist, who declares that mental occupation afforded him the sole relief from the anxieties and *ennui* incident on the voyage, had devoted himself to examining, and making finished drawings of many of the plants found at former times. The *Mosses*, which were collected in the far southern regions, particularly engrossed his attention; and taking the learned Mr. Brown's Appendix to Ross and Parry's First Voyages as a model, he made full descriptions of them all. He says, "The genus *Andrœa* puzzled me exceedingly and occupied many days, during which I examined several hundred specimens. I do hope my drawings are scrupulously accurate, for I invariably compared them with descriptions made on the spot at the time of gathering the specimens, and I consider the mosses to have generally received three different examinations. Where there is so much novelty, I may have occasionally erected varieties into species; but in such a novel field, I trust some allowance will be made for any errors. All the *Gymnostoma* of the South are *funarioid* in habit and alliance, as Brown first remarked of the *Gymnostomum fasciculare, &c.* I have placed them, accordingly, at the end of *Brya*. The general arrangement I have adopted is that of Arnott, as modified by my father, (Sir W. Hooker), in Lindley's work on the *Natural Orders*. There are hardly any novel genera, my main object being rather to place the plants in their true position and relation, than to give them new names, and then leave other botanists to squeeze them in wherever a place can be found among their congeners. There exist many beautiful analogies among the groups of *Mosses*, but it is difficult to characterize the genera properly. *Gymnostomum* must be split; for there is hardly a genus of *Acrocarpi*, to which each of the species does not bear more affinity than to its congeners, in the present arrangement.

"The other drawings I have made will be found mere attempts, especially the *Lichens*, which are the first I ever tried in this Tribe. The descriptions are full. There seems to me a sad deficiency of tangible generic characters in this family, except among the larger kinds. The green *globules* which form a *stratum* at the *base of the Asci*, in all those species which I have examined, are not noticed, so far as I can find, by any Botanist. I have also drawn the *Sargassum* of Deception Island and the *D'Urvillea*. The Flora of the Falklands has claimed some of my attention, but I have bestowed most pains on an introductory paper on the *Geographical Distribution of Antarctic plants*, distributing their relations to those of the Arctic regions, and the analogies which exist between the Antarctic Polynesian and American Floras.

"Circumstances have prevented my doing much during this cruize among the marine animals. I lost all my gauze among the Pack ice, from the water being full of little pieces of ice; and where there has been open sea, the gales blowing and a heavy swell running prevented the possibility of using the tow-net. I hope to pursue my drawing diligently on the passage between the Cape of Good Hope and England, and to study all the plants of the Cape and Rio which I can pick up while we stay at those Ports. But I have forgotten almost all that I ever knew of Tropical Botany, or even garden flowers, not having seen so much as a Rose since quitting New Zealand, almost two years ago.

"I often think of the Ward's Case which I sent home from the Falklands last November; and I hope the *Beeches*, especially, may have reached England alive. They were in such fine order when despatched! But, without seeing the *deciduous Beech* of Fuegia no one can form any idea of the exquisite beauty of its budding leaves. I trust these trees will thrive at Kew. Next to a good *Arboretum* at the Royal Gardens, I should like there to be a Fern-House. The noble *Tree-ferns*, huge *Acrosticha* and *Steganiæ*, with the *Hymenophylla* creeping on the ground, would be a splendid novelty. And *Ferns* are very easy of transportation. The more I saw of the *Filices*, the more I was convinced that their geographical distribution chiefly depended on an uniform and moist temperature, such as is generally found in islands. All the Magelhaenic species that inhabit the Falklands, acquire there a harsh and coriaceous consistency, from the vicissitudes of temperature and of the hygrometric state of the air to which they are exposed. The Kerguelen island *Stegania* I believe to be the most Antarctic of ferns, though its position as to latitude is far lower than that of many others."

Happily and usefully, as above detailed, was the Botanist occupied in the interval between quitting the ice and arriving at the Cape of Good Hope; where, as already stated, the ships came safely to anchor on the 4th of April, 1843.

Thus, by the undaunted skill of the most accomplished of Navigators and through a merciful Providence, such a series of investigations has been carried on, for three successive summers in the South Polar Regions, as cannot fail to prove of inestimable value to science in its various departments, and to maintain, for the British Navy, that pre-eminent rank which it has so long held among the nations; "terrible in war," and during times of peace, engaged in extending the boundaries of useful knowledge, promoting navigation and commerce, and prosecuting geographical discoveries through the remotest regions of our globe.

During this long and hazardous voyage, of four years' duration, much of it pursued through unknown seas, and amid perils and privations of no ordinary character, disease has never entered the ships, nor have any casualties taken place beyond what must be expected in every protracted cruize, under the most favourable circumstances. One poor fellow washed overboard in the tremendous seas between Kerguelen's Island and Van Dieman's Island, and another, in the awful hurricane described as occurring on the night of the 12—13th March, already mentioned in this article, are, I believe the only deaths: and a single officer and sailor invalided and sent home from the Falklands, but both, now, happily recovered, comprise all the sufferers by accident or illness.

A month's stay at the Cape of Good Hope, was anticipated, which, it was hoped, might yield some good herborizing, and an agreeable meeting with Dr. Wallich, Director of the H. E. I. Company's Botanic Garden at Calcutta, and now at the Cape for the benefit of his health; unless, indeed, that gentleman should still be on his tour in the interior. His society would afford some compensation for the absence of Mr. Wilmot.*

From the Cape, St. Helena was to be the next place visited, and then Rio; so that, we trust, ere autumn has closed, these enterprising and successful Antarctic Voyagers will be welcomed to their native shores.

Contributions towards a FLORA OF BRAZIL, *by* GEORGE GARDNER, F.L.S.

(*Continued from* Vol. I. p. 548.)

PART II.

PLANTS FROM THE ORGAN MOUNTAINS.

301. Clematis *Brasiliana, D.C. Syst.* 1. *p.* 143. *Prodr.* 1. *p.* 4. *St. Hil. Fl. Bras. Merid.* 1. *p.* 2. *Deless. Ic. Sel.* 1. *t.* 1. C. Bonariensis, *D.C. Syst.* 1. *p.* 145. *Prodr.* 1. *p.* 5. *ex St. Hil.*

HAB. In woods at Imbuhy. *Fl.* March.

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* Frederick Eardly Wilmot, Esq. (son of the recently appointed Governor of Van Dieman's Island, Sir Eardly Wilmot, Bart.) one of the officers of the Antarctic Expedition, who had been left in charge of the corresponding Observatory at Cape Town, on the first arrival of the ships at that port, in 1840, but is now on a visit to England. Mr. Wilmot is about to return to the Cape, and, as we understand, to be engaged in an important survey of a distant part of that colony.

† Those species which are not otherwise mentioned, were collected at an elevation of about 3,000 feet above the level of the sea.

302. Clematis *discolor* (sp. n.); caule scandente striato, foliis pinnatis, jugis 2-3-foliolatis, foliolis ovato-oblongis acuminatis acutis integerrimis 5-nerviis, supra pilosiusculis subtus dense sericeo-pubescentibus, floribus paniculatis, paniculis folio longioribus sublanuginosis, caudibus plumosis.

HAB. In woods at Imbuhy. *Fl.* March.

This *Clematis*, which I found with only unripe fruit, differs from *C. Brasiliana* in having the leaflets more distinctly 5-nerved, densely pubescent underneath, and the ramifications of the panicle covered with a close woolly pubescence. The leaflets are also of a more coriaceous texture.

303. Tetracera *oblongata*, *D.C. Syst.* 1. *p.* 399. *Prodr.* 1. *p.* 67. *Deless. Ic. Sel.* 1. *t.* 67. *St. Hil. Fl. Bras. Merid.* 1. *p.* 15.

HAB. In bushy places between Magé and the foot of the Organ Mountains. *Fl.* March.

304. Davilla *rugosa*, *Poir. Encyc. Sup.* 2. *p.* 456. *St. Hil. Fl. Bras. Merid.* 1. *p.* 18. D. Brasiliana, *D.C. Syst.* 1. *p.* 405. *Prodr.* 1. *p.* 69. *Deless. Ic. Sel.* 1. *t.* 71.

HAB. Common in woods. *Fl.* March.

305. Talauma *fragrantissima*, *Hook. Icon. Plant. t.* 208—212.

HAB. In swampy woods, not uncommon. *Fl.* Jan.

306. Guattera psilopus, *Endl. et Mart. Fl. Bras. Anonaceæ*, *p.* 27. *t.* 7. *f.* 1. G. Maypurensis, *Hook. Icon. Plant. t.* 227. *non H.B. et Kunth.*

HAB. In woods on the banks of the Rio Paquequer. *Fl.* Feb.

307. Rollinia *parviflora*, *St. Hil.* var. *β*, *angustifolia*, *Endl. et Mart. Fl. Bras. Anonaceæ*, *p.* 19. *t.* 6. *fig.* 1.

HAB. Rare in woods. *Fl.* April.

308. Cleome *spinosa*, *Linn. D.C. Prodr.* 1. *p.* 239.

HAB. Between Magé and the foot of the Organ Mountains. *Fl.* March.

309. Cleome *bicolor* (sp. n.); herbacea subinermis pubescens, foliis 5-foliolatis petiolis subaculeatis, foliolis lanceolatis utrinque attenuatis, floralibus simplicibus sessilibus cor-

dato-orbiculatis mucronatis, siliqua pubescente thecophorâ vix triplo longiore.

Hab. In open rocky and cultivated places. *Fl.* March, April.

Suffrutex 2-pedalis. Caulis subflexuosus. Foliola majora 2-poll. longa, 6 lin. lata. Pedicelli filiformes, 8 lin. longi. Sepala lanceolata, 1½ lin. longa. Petala unguiculata ovali-oblonga, 5-6 lin. longa, alba, limbi parte superiore purpureo. Filamenta purpurascentia. Siliqua 1½ poll. longa. Semina rufa, reniformi-globosa, rugosa.

Near *C. nummularia, D.C.*, of which, indeed, only the upper part is known, but differs in having larger flowers, which are purple, not white, cordate, sessile floral leaves, and rugose, not smooth, seeds.

310 Banara *Vellozii* (sp. n.); foliis elliptico-oblongis acuminatis grosse obtuse et distanter serratis supra nitidis glabriusculis subtus præcipue ad nervos piloso-pubescentibus, paniculis terminalibus pubescentibus, floribus tetrameris.

Boca serrata, *Vellozo Fl. Flum.* 5. *t.* 113.

Hab. In woods rare. *Fl.* April.

Arbor 12-pedalis. Folia alterna, superne viridia, subtus pallide virentia, pennivenia, breve petiolata. Stipulæ parvæ, deciduæ. Calyx 4-partitus, persistens. Petala 4, elliptico-oblonga, flava, calyce vix longiora. Stamina plurima. Antheræ parvæ, rotundæ, biloculares. Bacca globosa; stylo non deciduo terminata, unilocularis. Semina plurima.

311. Viola *balsaminoides, Gardn. in Hook. Icon. Plant. t.* 217.

Hab. In shady virgin forests on the banks of the Rio Imbuhy. *Fl.* Jan.

312. Viola *subdimidiata, St. Hil. Pl. Rem. p.* 277. *Dirc. Synop.* 1. *p.* 844.

Hab. Rare, in moist shady places. *Fl.* Jan.

313. Ionidium *commune, St. Hil. Pl. Rem. p.* 295. *Fl. Bras. Merid.* 2. *p.* 142. Solea communis, *Spreng. Cur. post. p.* 97.

Hab. Dry shady woods. *Fl.* March.

314. Drosera *villosa, St. Hil. Plant. Rem. p.* 267. *Fl. Bras. Merid.* 2. *p.* 133. *Spreng. Cur. post. p.* 126.

Hab. In Sphagnum bogs, at from 3,000 to 6,000 feet above the level of the sea. *Fl.* Feb.

315. Polygala *campestris,* (sp. n.); herbacea glabra procumbens vix ramosa, foliis distichis ovatis mucronatis subdenticulatis, racemis terminalibus laxis, sepalis exterioribus 3 inæqualibus obtusis, interioribus late ovatis obtusis 3-nerviis, carinæ lobo medio cristato, petalis lateralibus ad basin carinæ concretis, capsula oblonga emarginata glabra.

Hab. In dry pastures, rare. *Fl.* Feb.

Caules semipedales vel fere pedales, angulati, glabri, vix ramosi, procumbentes. Folia alterna, brevi-petiolata, 3-4 lin. longa, 2 circiter lata. Caruncula seminis pilosi brevior.

Allied to *P. Moquiniana, St. Hil.*

316. Polygala *Laureola, St. Hil. Fl. Bras. Merid.* 2. *p.* 50. *t.* 89.

Hab. In virgin forests. *Fl.* Jan.

317. Drymaria *cordata, Willd. ex Roem. et Schul. Syst.* 5. *p.* 406. *D.C. Prodr.* 1. *p.* 395.

Hab. In open waste and cultivated places, common. *Fl.* April.

318. Abutilon *carneum, St. Hil. Fl. Bras. Merid. p.* 205.

Hab. In virgin forests. *Fl.* March.

My specimens agree tolerably well with the description of St. Hilaire; but while, in his plant, the stems and petioles are said to be densely covered with stellated tomentum, in mine they are nearly glabrous.

319. Abutilon *rufinerve, St. Hil. Fl. Bras. Merid.* 1. *p.* 205. *t.* 42.

Hab. In woods. *Fl.* Feb.

320. Abutilon *Bedfordianum, Hook. Bot. Mag. t.* 3892.

Hab. In woods, common. *Fl.* Feb.

321. Abutilon *striatum, Dicks. Botanist, vol.* 3. *t.* 144.

HAB. In bushy places. *Fl.* Feb.

322. Pavonia *sepium, St. Hil. Fl. Bras. Merid.* 1. *p.* 225. P. flava, *Spreng in Mart. Herb. Fl. Bras. n.* 95. *et.* 291.

HAB. Bushy places. *Fl.* Jan.

323. Sida *erosa, Link, D.C. Prodr.* 1. *p.* 461.

HAB. In bushy and waste places, common. *Fl.* March.

324. Pavonia *begoniæfolia,* (sp. n.); suffruticosa erecta, foliis oblongis dimidiatis grossè serratis acuminatis basi rotundatis utrinque sparse stellato-pubescentibus pellucido-punctatis, floribus axillaribus terminalibusque subpaniculatis, involucri foliolis linearibus ciliatis, coccis 5 glabris uniaristatis.

HAB. In dense virgin forests. *Fl.* March.

Suffrutex bipedalis. Caulis teres, stellato-pubescens. Folia 6-8 poll. longa, 2-2½ poll. lata, pennivenia. Petioli 612 lin. longi, versus apicem dense stellato-pubescentes. Stipulæ parvæ, setaceæ, deciduæ. Pedicelli hispidi. Foliola calycis exterioris circiter 11, lineari-subulata, ciliata. Calyx interior campanulatus, quinque-dentatus, glaber. Corolla pallidè rosea. Cocci 5, glabri, uniaristati, aristis fere semiunciam longis, supra medium pilis rigidis reflexis asperis.

Allied to *P. typhalæa, Cav.*, but well distinguished by the solitary arista on each coccus.

325. Chorisia *speciosa, St. Hil. Plant. Usuelles, n.* 63. *Fl. Bras. Merid.* 1. *p.* 267.

HAB. In virgin forests, common. *Fl.* March.

326. Buttnera *rivularis* (sp. n.); dense stellato-tomentosa, caule fruticoso erecto petiolisque aculeatis, foliis cordatis ovatis acuminatis interdum subtrilobatis dentatis 5-nerviis 5-glandulosis, pedunculis axillaribus pluribus umbellatis, tubi staminei lobis sterilibus emarginatis lateraliter unidentatis, antheriferis brevissimis.

HAB. By the sides of streams. *Fl.* Feb.

Frutex 6-pedalis, ramis divaricatis. Folia 4-5-poll. longa,

2½ circiter lata, 5-costata, glandula oblonga ad basin singulæ costæ. Petioli 9 lin. circiter longi, aculeati. Umbellæ petiolo longiores. Sepala lanceolata, extus pilosa. Tubus stamineus et unguis petalorum breves. Capsula globosa echinata.

327. Dasynema *riparia* (sp. n.); foliis ovali-oblongis sublanceolatisve acuminatis basi obtusiusculis vel attenuatis membranaceis utrinque glabris, pedunculis axillaribus fasciculato-subracemosis tenuissime puberulis, sepalis 4 ovatis acutiusculis, capsula setosa 4-valvis.

HAB. By the sides of streams. *Fl.* March.

Arbor 40-50-pedalis. Folia alterna, 4-6 poll. longa, 18-22 lin. lata, venis prominentibus. Petioli semipollicares et ultra, basi et apice incrassati. Pedunculi 2-3 axillares, subracemosi, petiolo longiores. Bracteæ parvæ, setaceæ. Sepala 3-lin. longa, 2 circiter lata, lutea. Stamina plurima, disco lato foveolato imposita, sepalis breviora. Ovarium puberulum, 4-loculare. Styli 4, basi connati. Fructus lignosus, echinatus, 1-locularis, 4-valvis. Semen 1, pendulum.

328. Hypericum *Brasiliense, Chois. in D.C. Prodr.* 1. *p.* 547. *St. Hil. Fl. Bras. Merid.* 1. *p.* 335.

HAB. In moist open places. *Fl.* Feb.

329. Vismea *Hilairii.* V. Guianensis, *St. Hil. Fl. Bras. Merid.* 1. *p.* 327. *non Aubl.*

HAB. Dry bushy places. *Fl.* Jan.

This, I have no doubt, is the plant which is described by St. Hilaire, under the name of *V. Guianensis*, but it is quite a distinct species from that of Aublet, having much narrower calycine segments, with no glands at their base externally, leaves which can scarcely be said to be acuminate, and more oblong fruit.

330 et 331. The plants belonging to these numbers are probably both new species of *Tovomita*, but my specimens are not in a fit state to be described. They are shrubs about 8 feet high, growing in shady woods on the Organ Mountains.

332. Clusia *fragrans* (sp. n.); floribus polygamis, calyce

4-sepalo, corolla 4-petala alba, staminibus numerosis, foliis late obovatis obtusissimis breve petiolatis venosis margine revolutis.

Hab. Moist rocky places, at about 5,000 feet elevation. *Fl.* April.

Frutex 3-4-pedalis, succum album viscosum emittens. Folia 4-6-poll. longa, 3-4½-poll. lata, eleganter pennivenia. Petioli 6 lin. circiter longi, basi dilatati articulati. Flores ad apicem ramorum 2-3 terminales, magni (diametro circiter 3-pollicares), fragrantissimi. Pedunculi 3 lin. longi, basi articulati. Calyx basi stipatus, bracteis geminis ovato-subrotundatis, 4-sepalus, foliolis oppositis iobombricatis, vato-ortundatis. Petala 4, alba, obovata, æquilatera, integerrima, multivenosa. Stamina in floribus masculinis numerosissima; filamentis sublineam longis, complanatis; antheris linearibus filamento longioribus.

333. Marcgraavia *cuneifolia,* (sp. n.); foliis breve petiolatis obovatis obtusis emarginato-glandulosis basi cuneatis subaveniis, pedunculis corymboso-umbellatis glabris, pedicellis erecto-patentibus, bracteis cuculliformibus apice emarginatis, fructu depresso-globoso.

Hab. Climbing on rocks and trees in marshy places. *Fl.* Feb.

Frutex ramosus, scandens. Folia alterna, 2½-3 poll. longa, 12-15-lin. lata. Petioli 3-lin. circiter longi, supra canaliculati. Pedunculi circiter pollicares, basi bracteis cuculliformibus pollicaribus emarginatis muniti. Calyx 6-sepalus, sepalis imbricatis, inæqualibus, ovato-rotundatis, margine membranaceis. Petala 5, imbricata, subconnata, oblonga, obtusa, 3½ lin. circiter longa, lutea. Stamina 12, inclusa, receptaculo inserta. Filamenta basi dilatata. Antheræ oblongæ, basi affixæ. Ovarium conicum, in sicco striatum, 3-loculare. Stigma sessile, persistens. Fructus baccatus, depresso-globosus, 3-locularis. Semina plurima.

334. Trigonia *nivea, St. Hil. Fl. Bras. Merid.* 2. *p.* 113.

Hab. In dry bushy places, not uncommon. *Fl.* Feb.

335. Casearia *montana,* (sp. n.); ramulis puberulis demum

glabratis, foliis oblongis basi inæquilateris acuminatis, acumine obtusiusculo, serrulatis supra glabriusculis nitidis subtus petiolisque pubescentibus crebre punctatis, umbellis sessilibus, floribus minutissime tomentosis 5-fidis, sepalis membranaceis ovatis obtusis margine ciliatis, staminibus fertilibus 10 calyce longioribus, antheris subglobosis, stylo breviter trifido.

HAB. In dry woods. *Fl.* Jan.

Frutex 10-12-pedalis. Folia 3-4-poll. longa, 12-15-lin. lata. Petioli 3 lin. longi. Pedicelli graciles, petiolo vix longiores.

This species is most closely allied to *C. inæquilatera, St. Hil.*, but differs from it in having much larger leaves, which are also more sharply pointed, shorter petioles in proportion to the size of the leaves, shorter pedicels, shorter broader and ciliated calycine segments, and less divided styles.

336. Casearia *inæquilatera, St. Hil. Fl. Bras. Merid. 2. p.* 237. *Don, Dict. 2. p.* 52.

HAB. In dry woods, common. *Fl.* Feb.

337. Heteropteris *laurifolia*, (sp. n.); glabra, foliis membranaceis ovato-oblongis acutis basi subrotundatis supra nitidis subtus venis prominentibus versus marginem distanter glandulosis, petiolis basi biglandulosis, paniculis axillaribus terminalibusque sublepidoto-pubescentibus folio longioribus.

HAB. In bushy places. *Fl.* Feb.

Frutex scandens, ramosus. Folia opposita, 5-6 poll. longa, 2-2½ lata. Calyx 9-glandulosus, sepalis oblongis obtusis. Petala 5, integra, flava. Stamina 10, basi monadelpha. Filamenta alterna breviora. Carpella pilosa. Styli 3, distincti. Fructus ignotus.

Allied to *H. hiræoides, Ad. Juss.*

338. Banisteria *subcordata*, (sp. n.); piloso-pubescens, foliis ellipticis acuminatis basi subcordato-rotundatis subtus glandulosis, petiolis basi subtus 1-glandulosis, umbellis corymbosis 1-2 axillaribus terminalibusque tomentosis folio brevioribus.

HAB. In open bushy places. *Fl.* Feb.

Frutex scandens, ramosus. Folia opposita, petiolata, 3-3½ poll. longa, 1½-2 poll. lata. Petioli 3-4 lin. longi, teretes. Corymbi sub-10 flori. Calyx basi 8-glandulosus, sepalis ovato-oblongis, obtusis, utrinque tomentosis. Petala 5, sinuosa, glandulose-ciliata, rosea. Stamina 10, basi monadelpha. Antheræ valvis albis margine ciliatis. Carpella pilosa. Styli 3, distincti. Stigmata glandulosa, subcapitata. Fructus ignotus.

Allied to *B. Adamantina,* Mart. in Juss. Synop. Malp. *p.* 17.

339. Serjania *deflexa,* (sp. n.); hirsuta, ramis sulcatis, foliis deflexis biternatis, foliolis ovato-oblongis acuminatis grossè inciso-dentatis supra viridibus præsertim ad nervos pilosis subtus pallidè piloso-tomentosis, calyce 5-phyllo.

Hab. In dry woods, common. *Fl.* March.

Tota hirsuta. Caulis fruticosus, scandens, sulcatus. Folia biternata, pellucido-punctata: foliola terminalia 2½-3 poll. longa, 12-15 lin. lata, lateralia minora. Racemi axillares, solitarii, cum pedunculo communi 3-5 poll. longi, compositi, ramulis 1½ lin. longis, basi bicirrhosis. Calyx 5-phyllus, sepalis ovato-rotundatis, concavis, exterioribus paullo minoribus. Petala 4, alba, æqualia, obovata, apice rotundata, basi angustata, flabellato-venosa, glabra. Stamina basi subconnata, calycem subæquantia. Filamenta hirsuta. Fructus ignotus.

Near *S. velutina, et Hil.,* but well distinguished by its deflexed leaves, more acuminated leaflets, and more compact racemes.

340. Paullinia *discolor,* (sp. n.); foliis biternatis, foliolis ellipticis vel oblongo-ellipticis utrinque attenuatis versus apicem vix subdentatis supra ad nervos pubescentibus cæteris glabris nitidis subtus ferrugineo-pilosiusculis, petiolo nudo, rachi alata, capsula 3-alata.

Hab. In dry woods. *Fl.* April.

Caulis fruticosus, scandens. Rami sulcati, tomento denso ferrugineo vestiti. Folia biternata, obsolete pellucido-punctata: foliola terminalia 2-poll. longa, pollicem lata, lateralia minora. Racemi axillares, 5-6 poll. longi, compositi, ramulis 2-3 lin. longis, basi bicirrhosis. Calyx 5-phyllus, extus puberulus. Petala alba. Fructus immaturus trialatus, utrinque attenuatus.

341. Paullinia *belangerioides*, (sp. n.); glabra, foliis biternatis, foliolis oblongo-lanceolatis utrinque attenuatis supra medium argutè serratis, petiolo rachique nudis, racemis tomentosis, capsula trialata.

Hab. In dry bushy places. *Fl.* March.

Caulis fruticosus, scandens. Rami glabri, sulcati. Folia biternata, glabra, obsolete pellucido-punctata: foliola terminalia 3 poll. longa, pollicem lata, lateralia minora. Racemi axillares, 3-5 poll. longi, compositi, ramulis brevissimis vel subnullis basi sæpe bicirrhosi. Calyx extus puberulus. Petala alba, glanduloso-punctata. Fructus maturus ignotus.

342. Cupania *anacardiæfolia*, (sp. n.); foliolis 4-5-jugis latè oblongis obtusis basi acutis integris vel subdentatis glabris, calyce tomentoso.

Hab. In moist woods. *Fl.* April and May.

Arbor mediocris, ramis glabris, sulcatis, minute verrucosis. Folia abruptè pinnata: foliola 4-5-juga, alterna, 5-6 poll. longa, 2-2½ lata. Paniculæ axillares, glabriusculæ, folio breviores, rachi ramulisque angulosis. Calyx 5-partitus, dense tomentosus, foliolis ovatis obtusis. Petala 5, foliolis calycinis breviora, subrotunda, extus glabriuscula, intus tomentosa, vix ciliata. Discus integer. Stamina 8. Filamenta pilosa. Antheræ basi emarginatæ. Pistillum pilosum. Stigmata 3, sessilia, vix conspicua. Fructus ignotus.

Nearly allied to *C. oblongifolia, Mart. Herb. Fl. Bras. n.* 247, but the petiole is more angled on the upper surface, the panicle smaller, with larger flowers, the bracts larger, the petals scarcely ciliated and less hairy, and the style is shorter.

343. Symplocos *laxiflora, Benth. Linn. Trans.* 18. *p.* 232. *t.* 18.

Hab. Woods, rare. *Fl.* Feb.

344. Cissus *sylvatica, Cambess. in St. Hil. Fl. Bras. Merid.* 1. *p.* 345.

HAB. Bushy places. *Fl.* Feb.

My specimens agree very well with the description of Cambessedes in every thing except the leaves, which are broader than they are in St. Hilaire's specimens.

356 Oxalis *repens, Thunb. Ox.* 11. *t.* 1. *f.* 5. *D. C. Prodr.* 1. *p.* 693. *St. Hil. Fl. Bras. Merid.* 1. *p.* 120.

HAB. In open, waste and cultivated places. *Fl.* all the year.

346. Ilex *Paraguayensis, Lamb. Pin. t.* 2. *Spreng. Cur. Post. p.* 48. var. *a. Hook. in Lond. Journ. Bot.* 1. *p.* 35. *t.* 1.

HAB. In woods, but not common. In fruit in January.

347. Mertensia *Braziliensis,* (sp. n.); foliis ellipticis rotundatisve utrinque obtusis mucronatis apice subserratis supra pubescentibus subtus tomentosis, ramulis verrucosis subflexuosis, spinis solitariis deflexis vix recurvis, racemis axillaribus pubescentibus.

HAB. In bushy places, foot of the Organ Mountains. *Fl.* March.

Frutex 6-8-pedalis, ramosus. Folia alterna, brevi-petiolata, 6-10 lin. longa, 4-6 lata. Racemi breves, pauciflori. Calyx 5-sepalus, foliolis imbricatis, ovatis, acutis, extus puberulis. Stamina 5. Antheræ subrotundæ, basi emarginatæ. Styli 2, complanati, apice bifidi.

348. Casearia *pauciflora, Cambess. in St. Hil. Fl. Bras. Merid.* 2. *p.* 235.

HAB. In virgin forests, common. *Fl.* March.

349. Of this number I do not find a specimen in my collection.

ISODESMIA. Genus novum.

(ORD. NAT. LEGUMINOSÆ; HEDYSAREÆ.)

CHAR. GEN. Calyx bracteolis duabus, persistentibus, campanulatus, 5-fidus, subbilabiatus, laciniis subæqualibus, duabus superioribus obtusis, cæteris acutis. Corolla papilionacea: vexillum suborbiculatum, emarginatum, reflexo-patentissimum; alæ oblongæ, liberæ, vexillo breviores;

carinæ petala libera, obtusa, alis paulo breviora. Stamina 10, in phalanges duas, pentandras, coalita; antheræ conformes, ellipticæ. Ovarium sessile, 9-ovulatum. Stylus filiformis; stigma obtusum. Legumen sessile, integrum, lineare, compressum, apiculatum, 6-9 articulatum, articulis utrinque truncatis, monospermis, secedentibus. Semina compressa, subreniformia.—Frutex Brasiliensis, scandens, villoso-tomentosus; foliis imparipinnatis, foliolis 7-jugis, impunctatis, pedunculis axillaribus, solitariis, 2-3-floris, floribus flavis, pedicellatis, pedicellis basi bracteatis.

350 Isodesmia *tomentosa.*

Hab. In woods and bushy places at Imbuhy. *Fl.* Jan.—March.

Suffrutex scandens, villoso-fulvo-tomentosus. Rami teretes. Folia alterna, 4-5-poll. longa, imparipinnata: foliolis 7-jugis, impunctatis, breve petiolatis, lineari-oblongis, obtusis, apiculatis supra pubescentibus, subtus dense fulvo-tomentosis, 10-15 lin. longis, 2½-3 lin. latis. Stipulæ parvæ, reflexæ, lineari-subulatæ, circiter 3 lin. longæ. Pedunculi axillares, subtriflori, pollicares et ultra. Pedicelli 3 lin. longi, basi bracteati, bracteis brevibus, acutis. Flores flavi, subpollicares. Ovarium minutissime piloso-tomentosum. Legumen immaturum 3-4 poll. longum, 4-6 lin. latum.

Named from ισος equal, and δεσμος a bond, from the stamens being in two equal bundles.

The equally diadelphous stamens of this genus, and its articulated legume, approach it to *Æschynomyne*, but is well distinguished by its more deeply campanulate calyx, the petals of the carina being free, the legume sessile, and not sinuated at its carinal suture.

351. Desmodium *uncinatum, Vogel, in Linnæa,* 12. *p.* 107. *vix D.C. Prodr.* 2. *p.* 331.

Hab. Bushy places, Imbuhy. *Fl.* Feb.

352. Rhynchosia *phaseoloides, D.C. Prodr.* 2. *p.* 385.

Hab. At Magé, foot of the Organ Mountains. *Fl.* March.

353. Cleobulia *multiflora, Mart. in Benth. Comm. Leg. p.* 67.

HAB. Near Frechal, at the foot of the Organ Mountains. *Fl.* March.

354. Phaseolus? sp. One imperfect specimen only found.

355. Canevalia *picta, Mart. in Benth. Comm. Leg. p.* 71.

HAB. In woods, rare. *Fl.* Feb.

356. Centrosema *dasyantha, Benth. in Taylor, Ann. Nat. Hist.* 3. *p.* 436.

HAB. In bushy places by the sides of streams, common. *Fl.* Feb.

357. Machærium *sericiflorum, Vogel in Linnæa,* 11. *p.* 192. *Benth. in Ann. Mus. Vind.* 2. *p.* 98.

HAB. In woods at Imbuhy. *Fl.* Feb.

358. Swartzia *elegans, Schott in Spreng. Cur. Post. p.* 407.

HAB. In woods. *Fl.* January.

359. Acacia *recurva, Benth. Synop. Mim. in Hook. Lond. Journ. Bot.* 1. *p.* 519.

HAB. In woods at Imbuhy. *Fl.* Feb.

360. Acacia *adhærens, Benth. Syn. Mim. in Hook. Lond. Journ. Bot.* 1. *p.* 517. Mimosa adhærens, *Mart. Herb. Fl. Bras. n.* 174.

HAB. In woods, common. *Fl.* Feb.

361. Acacia *grandistipula, Benth. Syn. Mim. in Hook. Lond. Journ. Bot.* 1. *p.* 511.

HAB. In woods at Imbuhy. *Fl.* Feb.

362. Inga, sp. n. This new species of *Inga* will be described by Mr. Bentham in his "Synopsis of the Mimoseæ."

363. Inga *sessilis, Mart. Herb. Fl. Bras. p.* 114.

HAB. In woods. *Fl.* Feb.

364. Stryphnodendron *polyphyllum, Mart. Herb. Fl. Bras. p.* 117.

HAB. In dry bushy places. *Fl.* Feb.

365. Inga *semialata, Mart. Herb. Fl. Bras. n.* 152.

HAB. In woods by the margins of streams. *Fl.* Jan.

366. Cassia *Sellowi, Don Dict. p.* 442.—C. multijuga, *Rich. ex Vogel in Linnæa,* 15. *p.* 69.

HAB. In woods, common. *Fl.* Feb. and March.

367. Cassia *Lindleyana* (sp. n.); fulvo-tomentosa, foliolis

18-20 jugis lineari-oblongis mucronatis utrinque piloso-pubescentibus supra viridibus subtus glaucis glandulâ subulatâ inter infima paria, racemis paniculatis axillaribus terminalibusque folio brevioribus, pedunculis 1-3 floris.

HAB. In woods, common. *Fl.* Feb. and March.

Arbor 12-16-pedalis. Rami subangulati, fulvo-tomentosi. Folia multijuga, 6-7 poll. longa: foliolis 18-20-jugis, 10-12 lin. longis, 3 lin. circiter latis. Sepala glabra, valdè inæqualia. Petala obtusa, flava. Fructus ignotus.

Near *C. Sellowi*, but readily distinguished by its dense covering of fulvous tomentum.

368. Cassia *bijuga, Vogel, Syn. Gen. Cassiæ, p.* 17.

HAB. In woods. *Fl.* Feb.

369. Bauhinia *forficata, Link et Otto, Pl. Select. t.* 36.

HAB. In woods at Constancia. *Fl.* Feb.

370. Hirtella *Gardneri, Benth. in Hook. Journ. Bot.* 2. *p.* 216.

HAB. Banks of the Rio Paquequer. *Fl.* Jan. and Feb.

371. Cerasus *reflexa*, (sp. n.); glabra, racemis axillaribus reflexis folio duplo et ultra brevioribus, foliis longe petiolatis elliptico-oblongis lanceolatisve acuminatis basi acutis integerrimis subtus pallidis et versus basin biglandulosis.

HAB. In dry woods. *Fl.* Feb.

Arbor 12-18-pedalis, tota glabra. Rami teretes, verrucosi. Folia 4-4½ poll. longa, 1½ circiter lata. Petioli 9 lin. longi. Racemi fere bipollicares. Petala subrotunda, alba.

Near *C. Brasiliensis, Cham. et Schlect.*, but easily distinguished by its larger leaves, and reflexed racemes.

372. Rubus *Organensis*, (sp. n.); dense fulvo-glanduloso-tomentosus, ramis 5-angulatis aculeatis, aculeis parvis reflexis vix incurvatis, foliis ternatis, foliolis ovatis cordatis acuminatis minutè et argutè duplicato-serratis supra piloso-pubescentibus subtus pallidè tomentosis nervo medio infra petioloque aculeatis, floralibus simplicibus, stipulis subulatis, paniculis terminalibus subsimplicibus, laciniis calycinis ovatis acutis, petalis obovato-oblongis calyce longioribus.

HAB. In dry bushy places. *Fl.* March.

Frutex suberectus. Folia trifoliata, petiolis 2-3-poll. longis: foliolum terminale (petiolulum excludens) 4 poll. longum, 2½ poll. latum; lateralia vix minora, petiolulo triplo breviora. Stipulæ erectæ, subulatæ, 6-lin. longæ. Calyx 5-fidus, laciniis utrinque tomentosis. Petala obovato-oblonga, pallidè rosea. Fructus ignotus.

373. Citrosma *obovata*, (sp. n.); tota pube stellato-subtomentosa, foliis oppositis obovatis vel elliptico-oblongis acutis vel subacuminatis basi rotundatis cuneatisve minute denticulatis pellucido-punctatis, pedunculis axillaribus 1-3-floris.

HAB. Shady virgin forests. *Fl.* Feb. and March.

Frutex 4-6 pedalis. Rami versus apicem subtetragoni. Folia 3-5 poll. longa, 1½-2 poll. lata. Petioli 6-8 lin. longi. Fructus immaturus turbinatus, stellato-pubescens.

374. Amphilochia *acuminulata*, (sp. n.); glaberrima, foliis oppositis ovatis vel elliptico-oblongis acuminulatis basi rotundatis supra viridibus nitidis subtus glaucis, floribus axillaribus solitariis petiolo brevioribus, calycis lobo summo truncato extus subsericeo subgibboso ecalcarato, petalis subrotundatis utrinque sericeis.

HAB. In forests by the sides of rivers. *Fl.* March.

Arbor excelsa. Folia sub-3 poll. longa, 1½ lata. Petioli 6-8 lin. longi. Pedicelli petiolo duplo breviores. Filamenta complanata margine hinc pilosissima. Antheræ oblongæ, 4-loculares. Petalum subrotundum, emarginatum, margine undulato, subcæruleo. Ovarium pilosum. Styli glabri.

Allied to, but truly different from *A. cordata*, Zucc.

375. Fuchsia *integrifolia*, *Cambess. in St. Hil. Fl. Bras. Merid.* 2. *p.* 273. *Hook. in Bot. Mag. t.* 3948. Fuchsia affinis, *Cambess. in loc. cit.* 2. *p.* 274. F. pyrifolia, *Presl, Symb. Bot.* 2 *p.* 19. *t.* 65. F. radicans, *Miers. in Bot. Reg.* 1841, *t.* 66.

HAB. A climber upon trees, and rocks at from 3,000 to 7,000 feet above the level of the sea. *Fl.* Feb. to May.

376. Cuphea *ingrata, Cham. et Schlect. in Linnæa,* 2. *p.* 371.

HAB. By the sides of streams. *Fl.* Feb.

377. Chætogastra *Martiana, Benth. in Hook. Journ. Bot.* 2. *p.* 452. Arthrostemma Martiusianum, *D.C. Prodr.* 3. *p.* 137.

HAB. In sandy marshy places. *Fl.* Jan.

378. Rhynchanthera *dichotoma, D.C. Prodr.* 3. *p.* 107.

HAB. In marshy places, common. *Fl.* Jan.

379. Trembleya *heterostemon, D.C. Prodr.* 3. *p.* 126.

HAB. In Sphagnum bogs, at an elevation of about 3,000 feet. *Fl.* March.

380. Trembleya *heterostemon, D.C.* var. β. foliis et floribus duplo fere majoribus.

HAB. In Sphagnum bogs, at an elevation of about 5,000 feet above the level of the sea. *Fl.* April.

381. Lavoisiera *imbricata,* var. *a. insignis, Cham. in Linnæa,* 9, *p.* 369. L. insignis, *D.C. Prodr.* 3. *p.* 103.

HAB. In moist rocky places, at an elevation of about 5,000 feet. *Fl.* March.

The calycine segments are scarcely ciliated in my specimens, and the petals not so at all.

382 et 383. Leandra *villosa, D.C. Prodr.* 3. *p.* 154.

HAB. In bushy places, common. *Fl.* March.

384. Clidemia *fallax, Cham. in Linnæa,* 10. *p.* 41.

HAB. In open bushy places. *Fl.* Feb.

385. Clidemia *xantholasia, D.C. Prodr.* 3. *p.* 163.

HAB. By the sides of streams, and in moist places. *Fl.* Jan.

386. Clidemia *Nianga, D.C. Prodr.* 3. *p.* 163.

HAB. In moist bushy places. *Fl.* Jan.

387. Clidemia *tetraquetra, Cham. in Linnæa,* 10. *p.* 42.

HAB. In virgin forests. *Fl.* Jan.

388. Bertolonia *acuminata,* (sp. n.); caulibus suffruticosis simplicibus tetragonis subhirsutis ascendentibus basi radicantibus, foliis petiolatis oblongo-lanceolatis acutis acu-

minatisve basi obtusiusculis argutè ciliato-denticulatis 5-nerviis glaberrimis, corymbis terminalibus, limbo calycis 5-lobo acuto tubum breviore, petalis oblique acuminatis.

HAB. In shady virgin forests. *Fl.* Feb. and March.

Suffrutex pedalis et ultra. Folia 3½-4½ poll. longa, 10-15 lin. lata. Petioli subpollicares. Petala alba.

Near *B. Leuzeana*, *D.C.*, but a very distinct species.

389. Clidemia *dispar*, (sp. n.); ramulis compressis stellato-tomentosis, foliis longe petiolatis ovatis acuminatis minutè-denticulatis supra strigoso-pilosis subtus stellato-tomentosis 7-nerviis, nervis supremis à basi parum distantibus, panicula terminali, stylo longe exserto acuto.

HAB. In shady woods. *Fl.* Jan.

Frutex 4-6-pedalis. Folia opposita cujusque jugi disparia, 3½-6½ poll. longa, 1-2½ poll. lata. Petioli 6-15 lin. longi, supra fulvo-villosi, subtus stellato-tomentosi. Petala alba, oblonga, margine hinc versus apicem uni-dentata. Ovarium apice setosum.

Near *C. Caraccasana*, *D.C.*

390. Miconia (Eriosphæra) *Organensis*, (sp. n.); ramis obtusè tetragonis, petiolis paniculis foliisque subtus pube stellata subtilissime albidis, foliis petiolatis ovalibus vix acuminatis integerrimis supra glabris nitidis 3-nerviis cum nervo marginali, paniculâ terminali laxiusculâ, floribus in ramulis brevibus congestis, petalis obovatis emarginatis.

HAB. In open bushy places. *Fl.* March.

Frutex 4-6 pedalis. Folia 4-8-poll. longa, 2-3-poll. lata. Calyx striatus, campanulatus, vix dentatus. Petala alba.

391. Miconia (Eriosphæra) *divaricata*, (sp. n.); ramis subtetragonis, petiolis, paniculis foliisque subtus dense pube stellata ferrugineo-tomentosis, foliis petiolatis oblongis acuminatis basi acutis subdentatis 3-nerviis cum nervo marginali, panicula terminali magna, ramis divergentibus, floribus secus ramos sessilibus congestis, petalis obovato-oblongis emarginatis.

HAB. In woods by the sides of streams. *Fl.* Feb.

Frutex 4-8 pedalis. Folia 6-10 poll. longa, 2½-3 poll. lata. Calyx subcampanulatus, 5-dentatus. Styli apice incrassati.

392. Clidemia *scandens,* (sp. n.); tota rufo-hirsuta, caule scandente ramoso tereti hinc inde radicante, foliis petiolatis ovatis acutis acuminatisve basi rotundatis integerrimis 5-nerviis, racemis axillaribus paucifloris folio brevioribus, pedicellis bracteis calycibusque hispidis, petalis oblongis obtusiusculis.

HAB. Climbing and rooting on the stems of large trees, in the dense and humid virgin forests. *Fl.* Jan. and Feb.

Frutex scandens. Folia circiter 27 lin. longa, 15 lin. lata. Petioli 2 lin. circiter longi. Racemi sub 6-flori. Petala rosea.

Near *C. Epibaterium, D.C.,* but well distinguished by its entire leaves.

393. Oxymeris *quinquenodis, D.C. Prodr.* 3. *p.* 190.

HAB. In shady woods, common. *Fl.* Jan.

394. Miconia (Eumiconia), *depauperata,* (sp. n.); ramis teretibus, petiolis thyrsis calycibusque pube stellata decidua rufo-lepidotis, foliis petiolatis oblongo-lanceolatis longè acuminatis, basi acutis subdenticulatis 3-nerviis supra viridibus subtus albidis, thyrso racemoso terminali subsimplici paucifloro.

HAB. In virgin forests. *Fl.* Jan.

Frutex 6-pedalis. Rami bi- vel trichotomi. Folia 3-4½-poll. longa, 9-15 lin. lata. Thyrsi folio duplo breviores. Calycis tubus campanulatus, limbus 5-fidus, lobis subulatis. Petala alba, obovata, truncata.

Near *M. tristis, Spreng. in Mart. Herb. Fl. Bras. n.* 19.

395. Miconia (Eumiconia), *polyandra,* (sp. n.); ramulis subcompressis petiolis paniculis foliisque junioribus pube stellata decidua albido-lepidotis, foliis oblongo-lanceolatis acuminatis basi acutis integris 3-nerviis cum nervo submarginali, thyrso terminali paniculato, floribus in ramorum apice congestis, staminibus 20, petalis obovatis obtusis.

HAB. In woods. *Fl.* March.

Arbor parva. Folia 3-4½ poll. longa, 1-1½ poll. lata. Petioli 3-6-lin. longi. Calyx campanulatus, 5-dentatus. Petala alba. Styli filiformes. Stigma capitatum. Fructus grani piperis nigri magnitudine, depresso-globosus, 10-striatus. Semina angulata.

Near *M. eriodonta, D.C.*

396. Cremanium *paludosum,* (sp. n.); glaberrimum, ramis tetragonis, foliis petiolatis elliptico-oblongis acuminatis basi acutis glanduloso-serrulatis 3-nerviis, panicula terminali, calycis globosi dentibus 5 brevibus obtusis.

HAB. In moist bushy places. *Fl.* Jan.

Frutex 4-pedalis. Folia 5-6 poll. longa, 18-21 lin. lata, subtus pallidè viridia. Petioli 9 lin. longi. Paniculæ folio breviores. Petala subrotunda, alba. Styli apice incrassati. Stigma subcapitatum.

397. Oxymeris *velutina,* (sp. n.); ramis teretibus, petiolis foliisque subtus junioribus, paniculis pube stellata brevivellutinis, foliis petiolatis ovali-lanceolatis acuminatis basi obtusiusculis 3-nerviis integerrimis margine subrevolutis, thyrso terminali paniculato, calycis tubo obovato limbo 5-fido, lobis obtusis deciduis extus callosis, petalis ovatis acuminatis.

HAB. In bushy places, at an elevation of about 6,000 feet. *Fl.* March and April.

Frutex bipedalis. Folia 2-3 poll. longa, 8-12 lin. lata. Petioli 6-lin. longi. Paniculæ paucifloræ folio longiores. Petala alba. Styli filiformes, longe exserti, obtusi. Capsula 5-locularis. Semina cochleata.

398. Pleroma *albiflorum,* (sp. n.); fruticosa, ramulis tetragonis adpresso-setulosis demum glabratis, foliis ovato-ellipticis acutis 3-nerviis utrinque petiolisque adpresso-setulosis, floribus ternis terminalibus tetrameris, calycis tubo ovato setuloso lobis longiore, filamentis glabris.

HAB. In dry bushy places, abundant at an elevation of about 6,500 feet. *Fl.* March and April.

Frutex 3-pedalis. Folia 18-20 lin. longa, 7 lin. circiter

lata. Petioli 4-lin. longi. Flores albi, tetrameri. Calycis laciniæ ovatæ, ciliatæ, obtusæ, subpersistentes. Petala subfimbriata. Stamina 8. Antheræ connectivo brevi in calcar longiusculum bifidum producto. Ovarium ad apicem setosum. Capsula 4-locularis. Semina cochleata.

With the habit of *Pleroma*, this plant somewhat approaches *Arthrostemma* in the structure of its flowers. Having asked Mr. Bentham's opinion as to which of these genera it ought to be placed in, he replied as follows:—"Your *Melastomacea* (398) being tetramerous, comes, certainly, within the technical character of *Arthrostemma*, though it has not the habit of any section of that genus I am acquainted with. Notwithstanding it is tetramerous, I think it is allied to *Lasiandra Martialis*, Cham. The genera stand thus:—

Pentamerous, limb of calyx deciduous . PLEROMA.
„ „ persistent . CHÆTOGASTRA.
Tetramerous, „ „ ARTHROSTEMMA.

Now Martius neglects the number of parts, and unites *Arthrostemma* with *Chætogastra*, and this I am persuaded must be done, dividing the combined genera on other principles; and if so, your plant would go into *Pleroma*, on account of the deciduous limb of the calyx and the habit (supposing the stamens to agree, and you will observe they need not be hairy) notwithstanding its tetramerous flowers." Acting on these views, I place the plant in *Pleroma*. The stamens only differ from those of the normal species of that genus in having the spur of the connective much longer, and more deeply bifid.

399. Chænopleura *parviflora*, (sp. n.); ramis junioribus foliisque subtus pube stellata subtilissima sublepidotis, foliis petiolatis oblongo-lanceolatis longè acuminatis basi acutis integerrimis supra glabris 3-nerviis, panicula magna terminali, calycis latè campanulati limbo 5-dentato deciduo, lobis obtusis.

HAB. In woods. *Fl.* Feb.

Arbor 12-16 pedalis. Folia 4½-6 poll. longa, 15-18 lin.

lata. Petioli 6 lin. longi. Panicula ramosissima, rami graciles. Flores parvi, albi. Petala obovata, obtusa. Styli apice incrassati, lineam longi.

The genus *Chænopleura* is very nearly allied to *Miconia*, differing chiefly by the anthers dehiscing longitudinally, not by pores. It may also be readily distinguished by the three large veins of the leaves being connected together at the base by a thin membrane.

400. Chænopleura *lanceolata* (sp. n.); subglabra, foliis petiolatis lanceolatis longè acuminatis basi acutis integerrimis glabris, paniculis terminalibus, calycis lati campanulati limbo 4-5-dentato, lobis acutis.

Hab. In woods. *Fl.* Feb.

Frutex 8-10 pedalis. Folia 3½-4½ poll. longa, 8-10 lin. lata. Petioli 6-8 lin. longi. Calyx laciniis subpersistentibus. Petala alba, obovato-oblonga. Styli apice incrassati, 1½ lin. longi.

This species differs from the former by having much narrower leaves, larger flowers, subpersistent acute calycine segments, more oblong petals, and styles one-third longer.

401. Chænopleura *densiflora* (sp. n.); paniculis foliisque subtus pube stellata subtilissima sublepidotis, foliis ellipticooblongis longè acuminatis basi acutis integerrimis supra glabris, paniculis axillaribus terminalibusque, calyce latocampanulato 4-dentato, dentibus brevibus obtusissimis.

Hab. In woods. *Fl.* Feb.

Frutex 8-10 pedalis. Folia 3½-4½ poll. longa, 12-18 lin. lata. Petioli 2 4 lin. longi. Flores tetrameri. Petala late oblonga, alba. Styli vix lineam longi.

Distinguished from *C. lanceolata* by its shorter and broader leaves, with shorter petioles, larger flowers, broader and more oblong petals, shorter and very obtuse calycine segments, and much shorter style.

402. Cremanium *chænopleuroides* (sp. n.); ramulis subcompressis, paniculis petiolis foliisque pube minuta subvelutina, foliis oblongo-lanceolatis acuminatis acumine apiculatis subdentato-crenatis 3-nerviis cum nervo submarginali,

paniculis axillaribus terminalibusque, calyce obconico sub-5-dentato.

HAB. In woods, common. Fl. Jan.

Frutex 6-8 pedalis. Folia 4½-5 poll. longa, 15 lin. circiter lata. Paniculæ folio breviores. Petala alba, obovata, sub-oblique truncata. Styli filiformes.

In this species the anthers are almost intermediate between those of *Miconia* and *Chænopleura*, the cells being split nearly half way down.

403. Pleroma *virgatum* (sp. n.); ramulis tetragonis setis adpressis asperis, foliis petiolatis ovatis vel ovato-oblongis acutis basi rotundatis cordatisve 5-nerviis supra adpresse setosis subtus villoso-subtomentosis, pedunculis axillaribus trichotomo-cymosis in thyrsum paniculatum dispositis, calycis setosi lobis lanceolatis ciliatis, petalis ciliatis, filamentis glabris, stylo glabro.

HAB. Bushy places, at an elevation of about 5,000 feet. *Fl.* March and April.

Frutex bipedalis. Folia 2½-3 poll. longa, 12-15 lin. lata. Petioli 4-6 lin. longi. Petala purpurea. Ovarium apice setosum. Capsula 5-locularis. Semina cochleata.

404. Pleroma *echinatum* (sp. n.); ramulis tetragonis piloso-tomentosis, foliis petiolatis ovato-oblongis elliptico-oblongisve obtusis basi rotundatis supra adpressè setoso-echinatis subtus villoso-tomentosis, floribus ternis terminalibus, bracteis subrotundatis villosis alabastrum junius involventibus deciduis, calycis setosi lobis 5 ovatis obliquè truncatis ciliatis, petalis ciliatis, filamentis glabris, stylo glabro.

HAB. In bushy places, at an elevation of about 6,000 feet. *Fl.* March and April.

Frutex bipedalis. Folia 1½-2 poll. longa, 9-12 lin. lata. Petioli 2-3 lin. longi. Petala purpurea, majuscula. Ovarium dense pilosum.

405. Pleroma *elegans* (sp. n.); ramulis teretiusculis adpressè setoso-hispidis, foliis petiolatis ovato-oblongis utrinque acutis supra glaberrimis rugosis subtus adpressè pilosis 3-nerviis ciliatis, floribus subternis terminalibus, pedicellis brevibus

hispidis, bracteis lanceolatis ciliatis, calycis setosi lobis angustis, petalis glabris, filamentis subpilosis.

Hab. In dry bushy places. *Fl.* March.

Frutex 4-6-pedalis. Folia 2-2½-poll. longa, 6-8 lin. lata. Petioli 4-6 lin. longi. Petala ampla, purpurea.

Near *P. Kunthianum*, nobis (*Lasiandra Künthiana, DC.*), but with smaller leaves, smaller flowers, and much longer and narrower calycine segments.

406 et 407. Pleroma *Kunthianum.*—Lasiandra Kunthiana, *DC. Prodr.* 3, *p.* 128.

Hab. In dry bushy places, common. *Fl.* March.

408. Pleroma *Raddiana.*—Lasiandra Raddiana, *DC. Prodr.* 3, *p.* 129.

Hab. In dry bushy places, along with *P. Kunthianum. Fl.* March.

409. Pleroma *multiflorum* (sp. n.); ramis alato-tetragonis adpressè villosis, foliis petiolatis ovatis acutis 5-nerviis supra sericeo-villosissimis subtus villosis cano-tomentosis, panicula thyrsoidea terminali multiflora, bracteis parvis ovatis acutis, calycis adpressè villosi albi tubo ovato lobis lanceolatis, filamentis glanduloso-pilosis, stylo hispido.

Hab. In moist bushy places. *Fl.* March.

Frutex 5-6-pedalis. Rami virgati. Folia 4-4½-poll. longa, 2-2½-poll. lata. Petala purpurea, vix ciliata. Ovarium dense pilosum.

410. Pleroma *Benthamianum, Gardn. in Hook. Bot. Mag. t.* 4007.

Hab. In moist bushy places. *Fl.* March.

411. Pleroma *arboreum* (sp. n.); arboreum, ramis teretiusculis setis minimis adpressis asperis, foliis petiolatis oblongis utrinque acutis supra adpressè setosis nitidis subtus setulosis 3-nerviis cum nervo submarginali, floribus ternis terminalibus, pedicellis subtetragonis asperis, bracteis calyptratis setulosis deciduis, calycis sericeo-villosi lobis 5 oblongis obtusis, petalis minute ciliatis, filamentis hirsutissimis, stylo basi piloso.

Hab. In dense virgin forests. *Fl.* March.

Arbor 40-50-pedalis. Folia 3½-4½-poll. longa, 1-1½ poll. lata. Petioli 6-9 lin. longi. Petala magna, purpurea. Ovarium apice setosum.

412. Pleroma *fissinervium*.—Lasiandra fissinervia, *DC. Prodr.* 3, *p.* 130.

HAB. In dry woods. *Fl.* March.

413. Myrcia *sphærocarpa, DC. Prodr.* 3 *p.* 251.

HAB. In woods, common. *Fl.* Feb.

414. Eugenia *sylvatica* (sp. n.); ramis paniculis foliisque subtus dense ferrugineo-tomentosis, foliis elliptico-oblongis obtuse acuminatis basi acutis superne glabris pellucido-punctatis, pedunculis extra-axillaribus racemoso-paniculatis folio brevioribus, calycis lobis 4 rotundatis patulis.

HAB. In dense virgin forests. *Fl.* March.

Frutex 6-8-pedalis. Folia 5-6-poll. longa, 2-2½ lata. Petioli 6 lin. circiter longi. Pedunculi paulo supra folia orti, oppositi, 4 poll. longi. Calyces pilosi, pellucido-punctati. Petala 4, alba, ovata, pubescentia, pellucido-punctata. Ovarium biloculare, loculis 4-ovulatis.

415. Myrcia *elliptica* (sp. n.); ramis paniculis foliisque subtus villoso-tomentosis, foliis ellipticis utrinque obtusis supra glabris pellucido-punctatis, pedunculis axillaribus paniculatis folio duplo fere longioribus, bracteis calycibusque villosis, calycis lobis 5 ovatis acuminatis.

HAB. In marshy bushy places. *Fl.* Feb.

Frutex 6-pedalis. Folia 1½ poll. longa, pollicem lata, margine in siccum valdè revoluta. Petioli 1-2 lin. longi. Pedunculi 2-2½ poll. longi. Petala alba, pellucido-punctata, extus pubescentia. Ovarium 2-loculare, loculis 2-ovulatis.

416. Eugenia *Mooniana* (sp. n.); pedicellis 1-3 axillaribus unifloris folio sextuplo brevioribus apice bibracteatis pucentibus, calycis lobis 4 obtusissimis, foliis petiolatis ellipticis cuminatis basi obtusis utrinque glabris supra nitidis cido-punctatis.

HAB. In woods, rare. *Fl.* Feb.

Arbor 16-20-pedalis. Rami glabri. Folia 2½3-poll. longa, 12-15-lin. lata. Petioli 3-4-lin. longi. Pedicelli 6 lin. longi. Ovarium 2-loculare, loculis pluriovulatis.

This species of *Eugenia* I dedicate to Mrs. Moon of Rio di Janeiro, who kindly collected and dried specimens of it for me.

417. Campomanesia *hirsuta* (sp. n.); ramulis petiolis foliis subtus calycibusque hirsutis, foliis brevè petiolatis elliptico-oblongis acutis subacuminatisve supra glabris nitidis pellucido-punctatis, pedunculis axillaribus unifloris, calycis lobis 5 ovatis acutis.

HAB. In virgin forests, rare. *Fl.* Feb.

Frutex 8-12-pedalis, ramosus. Folia 2½-3½-poll. longa, 15-18-lin. lata. Petioli 1½ lin. longi. Petala alba, pellucido-punctata. Discus staminifer ut in *Psidio latus*. Ovarium 10-15-loculare, loculis pluriovulatis. Bacca magna, fere 3-poll. diametro, depresso-globosa.

The fruit of this shrub, even when ripe, is very acid, and is frequently made into tarts by the English families resident on the mountains during the hot season.

419. Campomanesia *laurifolia* (sp. n.); ramulis compressis, petioli spedicellis calycibusque minutè velutino-tomentosis, foliis oblongis acuminatis basi vix acutis supra glabris nitidis subtus pallidè pubescentibus pellucido-punctatis, pedunculis axillaribus unifloris apice bibracteatis, bracteis subfoliaceis lanceolatis, calycis lobis 5 ovatis acutis vel obtusiusculis utrinque velutino-tomentosis.

HAB. In virgin forests. *Fl.* March.

Arbor 12-16-pedalis. Folia 5-6-poll. longa, 2-poll. circiter lata. Petioli 3 lin. longi. Pedunculi petiolo paulo longiores. Petala extus pubescentia. Ovarium 8-loculare, loculis pluriovulatis.

420. Eugenia *complanata* (sp. n.); pedicellis axillaribus 1-floris geminis complanatis petiolo paulo longioribus subflore bibracteolatis, foliis petiolatis late oblongis utrinque attenuatis apice subacuminatis supra glabris subtus ad nervos petiolisque minute velutino-tomentosis, pellucido-punctatis, ramulis compressis velutino-tomentosis, calyci-

bus 4-fidis, laciniis ovatis concavis margine membranaceis ciliatis.

Hab. In shady woods. *Fl.* Feb.

Frutex 6-pedalis. Folia 4-6-pollicaria, 2-2½ poll. lata. Petioli 3 lin. longi, supra canaliculati. Pedicelli 4 lin. circiter longi. Ovarium 3-loculare, loculis 6-ovulatis.

421. Eugenia *hypericifolia* (sp. n.); pedicellis 1-2 axillaribus 1-floris folio triplo fere brevioribus sub flore bibracteolatis, ramulis calycibusque velutino-tomentosis, foliis oblongo-ellipticis acuminatis basi acutis supra glabris nitidis subtus pallidis minutè pubescentibus impunctatis petiolatis, calyce 4-fidi laciniis ovatis acutiusculis.

Hab. In woods by the sides of streams. *Fl.* March.

Frutex 6-8-pedalis. Folia 2-poll. longa, 8-12-lin. lata. Petioli lineam circiter longi. Pedunculi 8-lin. longi. Petala alba, subciliata, glanduloso-punctata. Ovarium 3-loculare, loculis 6-ovulatis.

422. Myrcia *anacardiæfolia* (sp. n.); pedunculis axillaribus racemoso-paniculatis paucifloris compressis folio brevioribus ramulisque villoso-tomentosis, foliis petiolatis ellipticis apice obtusiusculis basi acutis supra glabris pubescentibus pellucido-punctatis, calycis tubo adpressè albido-villoso, lobis 5 obtusissimis.

Hab. In virgin forests. *Fl.* Feb.

Frutex 8-10-pedalis. Folia 4½-poll. longa, 2½-poll. circiter lata. Petioli 3 lin. longi. Pedunculi 3 poll. longi, sub-12-flori. Ovarium biloculare.

423. Myrcia *Browniana* (sp. n.); pedunculis extra-axillaribus paniculatis geminis folio triplo fere brevioribus compressis, ramulis petiolis foliis subtus calycibusque minutissimè albido-lepidotis, floribus 5-fidis, foliis magnis oblongis acutè acuminatis petiolatis supra glabris nitidis pellucido-punctatis, ramulis compressis.

Hab. In virgin forests, rare. *Fl.* March.

Frutex 8-12-pedalis, ramosus. Folia pedalia et ultra 4-4½-poll. lata. Petioli 3-lin. longi. Paniculi 5-poll. longi, trichotomi, paulo supra folia orti. Calyx 5-fidus, laciniis

obtusissimis. Petala oblonga, obtusa, alba, glabra, subpellucido-punctata. Ovarium biloculare.

This handsome and very distinct species of Myrcia, I dedicate to the *Botanicorum Princeps.*

425. Feuillea *tomentosa* (sp. n.) ; foliis quinque-lobatis lobis integerrimis inferiorum obtusis superiorum acutis supra piloso-pubescentibus subtus tomentosis.

HAB. In bushy places, common.

♂. Herba scandens. Rami basi suffruticosi, sulcati, tomentosi. Racemi axillares, tomentosi, paniculam efformantes, versus basim cirrhosi, cirrhis bifidis; pedunculi multiflori, racemosi; pedicelli breves. Calyx 5-fidus, lobis obovato-oblongis, obtusis. Petala 5, obovata, obtusa, calycis fauci inserta, sepalis alterna. Stamina 10, cum petalis inserta, quorum 5 sterilia alterna.

(*To be continued.*)

Second paper on the distribution of Aberdeenshire plants, by G. DICKIE, MD., *Lecturer on Botany in the University and King's College of Aberdeen.*

THE remarks published in a former number of this Journal (March 1843) had reference to the upper limits in Aberdeenshire, of plants, which in the same county approach also the level of the sea.

The present communication will embrace the lowest observed limits of plants, which usually abound most, in the high grounds of the interior. I believe, something will be added to the value of the statements, by mentioning the distance of the localities from the sea, as well as their elevation above its level.

A great part of Aberdeenshire partakes very much of the nature of an insular climate. The influence exerted by the vicinity of the sea is best seen in winter; especially when moderate falls of snow have taken place. The snow seldom remains for any great length of time (excepting in winters of unusual severity) over a belt parallel to the sea, and extending a few (probably 6 to 10 miles) inland.

Like the former communication, this can only be considered supplementary to Mr. Watson's second paper in the 6th number of this Journal, and the same order will be followed:

Cerastium latifolium. A plant agreeing with the description in the British Flora occurs abundantly on the hill of Khoil (composed of serpentine) near Ballater, the lowest limit being 1742 feet, and 43 miles inland.

Even supposing it to be the other species, *C. alpinum,* this locality will be lower than the lowest recorded by Mr. Watson.

Statice Armeria. Is found along the whole course of the Dee from above Ballater to Aberdeen, *Silene maritima* being sometimes associated with it; and both may be seen with *C. latifolium* in the locality already mentioned.

It is perhaps worthy of remark, that in the interior of Aberdeenshire, the *S. Armeria* is most usually found on serpentine, as at the place already alluded to; it also occurs on the Green Hill of Strathdon, composed of the same rock (43 miles inland, and at about 1500 feet), and on the serpentine in the vicinity of Rhymie, estimated as not exceeding 600 feet above the sea, and 33 miles inland. In Strathdon and near Rhymie, this plant is associated with *Arenaria verna,* which in this county has hitherto only been found on serpentine; the upper and lower limits of *A. verna* being therefore 1500 and 600 feet.

Salix reticulata. Rocks in Glen Callater at 2000 feet, about 60 miles from the sea.

Veronica alpina. Glen Callater, 2300 feet.

Juncus castaneus. Glen Callater, 2300 feet, but rare.

Saussurea alpina. Glen Callater, 2245 feet.

Arabis petræa. On the gravelly banks of the Dee at Ballater at 800 feet (42 miles inland). It also occurs on the Khoil with *C. latifolium, Silene maritima* and *Statice*

Armeria, at 1742 feet; this last is perhaps the true lower limit.

Salix herbacea. Near the top of the Buck of the Cabrach, at 2247 feet and 36 miles from the sea. This hill is the highest within many miles and almost isolated.

Carex rigida. On the Khoil at Ballater at 2000 feet.

Juncus triglumis. In marshes near the inn at Castleton of Braemar, at 1200 feet.

Rubus Chamæmorus. On the hill of Fane, 15 miles inland, at 1000 feet and upwards; and on Bennachie, 23 miles inland, and at an elevation not exceeding 1000 feet.

Cornus Suecica. Near the church of Corgarff in Strathdon at 1200 feet, and 50 miles inland.

Saxifraga hypnoides. On the Khoil at Ballater at 1800 feet. It occurs on the Banffshire coast not many miles from the boundary between Aberdeen and Banffshire.

Tofieldia palustris. At Corgarff with *Cornus Suecica.*

Saxifraga oppositifolia. On the sea cliffs at Aberdour, the most northern point of our coast; abundant and certainly not introduced.

Oxyria reniformis. Occasionally along the whole course of the Dee to Aberdeen. The lowest *natural* limit I believe to be in the vicinity of Ballater at 900 feet and 44 miles inland.

Rhodiola rosea. Abundant on the Aberdeenshire coast, the southmost locality being at the Bullars of Buchan.

Pyrola secunda. In a ravine on the hill of Fane, estimated at 800 feet, certainly far under 1000, and about 15 miles inland.

Epilobium alpinum. Found some years ago on the banks of the Dee near Aberdeen, now extirpated, and evidently not its *natural* lower limit, which I regret to say I have not yet ascertained.

Alchemilla alpina. Occasionally along the whole course of the Dee to Aberdeen. The lowest *natural* limit is probably near Ballater about 900 feet, where it is abundant, and forms a constituent of the turf.

Saxifraga aizoides. Not unfrequent along the whole course of the Dee to Aberdeen. The lowest natural limit appears, however, to be in the parish of Lumphanan at Findrae (in wet places), 20 miles inland and probably not exceeding 500 feet above the sea level.

Arbutus Uva Ursi. In great profusion on a moor, 12 miles west from Aberdeen, at about 300 feet.

Galium boreale. Very abundant near Aberdeen, and not uncommon along the whole course of the Dee.

Carex pauciflora. Very abundant on the hill of Fane, 15 miles west from Aberdeen, at 800 feet.

I embrace this opportunity of recording the elevations of two of our rare plants, viz. *Carex rupestris* and *C. leporina.*

C. rupestris. Glen Callater, not lower than 2000 feet, plentiful at 2397 feet, but I was unable to measure its highest point. Last summer Professor Balfour gathered it, along with *Luzula arcuata*, and *Astragalus alpinus*, on the Ben Avon range, the altitude is not, however, recorded. This will be a lower limit for the *L. arcuata* in this part of the country, than has hitherto been found, since the Ben Avon range does not exceed 3920 feet.

C. leporina. On Lochnagar at 3559 feet more or less. The best guide to its locality is the Glassilt burn, which falls into Loch Muich, near its head and on its north bank. It will be found in a line, leading directly from the source of the Glassilt; it grows on the slope overlooking the Loch-an-yeans, (Birds' lakes). It occurs among the debris of rocks, moistened by springs; there is usually some snow in its vicinity, often partially concealing it; *Poa alpina*, *Phleum alpinum*, and *Alopecurus alpinus*, are found with it.

The *Birds' lakes* are on the west side of Lochnagar, and at the foot of the White Mouth, a high peak near Lochnagar.

CONTRIBUTIONS *towards a* FLORA *of South America.—Enumeration of Plants Collected by* MR. SCHOMBURGK, *in British Guiana.*—By GEORGE BENTHAM, ESQ.

(Continued from p. 52 *of this volume.)*

DILLENIACEÆ.

726. Curatella *americana, Linn.—Aubl. Fl. Guian. v.* 1. *p.* 579. *t.* 232.—British Guiana, *Schomburgk, n.* 92.—The Brasilian C. *Cambaiba* St. Hil. appears scarcely distinguishable from this species.

ANONACEÆ.

727. Xylopia *salicifolia, Dun. Monogr. Anon. p.* 121. *t.* 17.—On the Rio Quitaro, *Schomburgk, n.* 560.

728. X. *grandiflora St. Hil. Fl. Bras. Merid.* v. 1. p. 40.—X. *longifolia Alph. D. C. Mem. Anon. p.* 34.—Mountainous situations at Anna-y on the Rupunoony, *Schomburgk, n.* 609.—This species appears to have a very wide range from Columbia and Panama to South-Brazil.

729. Guatteria *Schomburgkiana Mart. Fl. Bras. Anon. p.* 38.—British Guiana, *Schomburgk, n.* 466.

730. G. *elongata (sp. n.),* ramulis foliisque novellis subtus appresso-pilosulis, foliis elongato-oblongis acuminatis basi acutis, pedunculis subgeminis brevissimis crassis supra basin squamoso-bracteatam articulatis calycibusque ferrugineo-sericeis.—Arbor elata. Ramuli teretes. Folia 5-9 poll. longa, 15-21 lin. lata, acumine longo obtusiusculo, subcoriacea, supra nitida, costis subtus prominentibus. Petiolus brevis, subferrugineus, pilis adpressis. Pedunculi petiolo breviores. Flores graveolentes. Sepala latissima, dense ferruginea. Petala crassa, demum 9-10 lin. longa, basi extus dense, cæterum tenuiter ferrugineo-pubescentia. Fructus non vidi.—This plant agrees in some respects with the

G. *subsessilis*, *Mart.* described from fruit specimens, whilst Schomburgk's are in flower only, so that it is impossible to compare them in any essential character. The leaves are, however much longer than those described by Martius, the branches certainly not angular, nor is the plant quite glabrous. On the Rio Negro, *Schomburgk*, *n.* 962.

731. G. *foliosa* (*sp. n.*), ramulis foliisque subtus tenuiter appresso-pubentibus, foliis crasso-membranaceis ex ovato lanceolatis acuminatis basi rotundatis supra nitidis, pedunculis solitariis v. geminis supra basin minute bracteolatam articulatis pollicaribus florum diametro demum brevioribus petalis obtusis basi extus calyce que ferrugineo-serices cuneato-oblongis subæqualibus, baccis oblongis stipite semipollicari brevioribus.—Arbor elata, (70-80-pedalis). Folia 3-4 poll. longa, 1½-2 poll. lata, longiuscule petiolata, acumine longo obtusiusculo, venulis crebris reticulatis utrinque prominentibus. Flores primum dense ferrugineo-sericea. Petala tandem valde aucta, subcanescentia. Baccæ circa 20, glabræ, obtusæ, stipite tenui.—This is evidently very near G. *densicoma Mart.*, but differs from his description in the leaves rounded, not acute, at the base, the inner and outer petals equal in breadth, and the shorter stipes of the berries.—On the Rio Negro, *Schomburgk*, *n.* 995.

732. G. *inundata Mart. Fl. Bras. Anon. p.* 36.—Lagoons at Pedrero on the Rio Negro, *Schomburgk*, *n.* 922.

733. G. *heteropetala* (*sp. n.*), ramulis foliisque novellis subtus minutissime puberulis mox glabrescentibus, foliis anguste oblongis breviter acuminatis basi angustatis crasso-coriaceis nitidis, pedunculis brevissimis ferrugineo-puberulis supra basin subsquamosam articulatis, sepalis petalisque exterioribus vix iis majoribus ovatis acutis extus subferrugineo-sericeis, petalis interioribus maximis crassis ovato-lanceolatis incanis.—Arbor 40-pedalis. Folia 4-6 poll. longa, 15-18 lin. lata, opaca v. vix nitidula, petiolo semipollicari supra late canaliculato. Pedunculi petiolo breviores, recurvi. Flores odorati. Petala flavida, exteriora vix 3 lin. longa, interiora fere pollicaria, 5 lin. lata, basi concava, medio

incrassata. Stamina lutea. Ovaria uniovulata. Fructus non vidi.—Swamps on the Rio Negro, *Schomburgk, n.* 950.

734. Duguetia *Quitarensis* (*sp. n.*), foliis oblongis longe et acute acuminatis basi acutis supra glaberrimis nitidis subtus lepidotis, pedunculis unifloris squamosis ramulisque dense lepidotis, sepalis ovali-oblongis petalisque oblongis obtusioribus extus dense lepidotis intus pilis stellatis incanis.—Folia coriacea 4-6 poll. longa, 1-2 poll. lata, petiolo bilineari. Pedunculi laterales, solitarii, 9-10 lin. longi, crassiusculi, squamis 2-3 parvis latis, superiore majore a calyce distante. Sepala semipollicaria. Petala paullo longiora, inferne angustata. Fructus nonnisi juniores vidi.—A small tree, with a valuable wood called *Lana wood* or *Yarry-Yarry* of the Arrowaks. On the Rio Quitaro, *Schomburgk, n.* 561.

735. Rollinia *orthopetala Alph. D.C.—Mart. Fl. Bras. Anon. p.* 18. British Guiana, *Schomburgk.*

MYRISTICEÆ.

736. Myrictica *sebifera,* Sw.—Pirara, *Schomburgk, n.* 711.

MENISPERMACEÆ.

737. Cissampelos *crenata, D.C. Syst. Veg. v.* 1. *p.* 537. Folia crassa, molliter præsertim in pagina inferiore tomentosa, in planta fœmina basi subcordata, in mare basi truncata.—Arid Savannahs near Pirara, *Schomburgk, n.* 124.

738. C. *fasciculata* (*sp. n.*), volubilis, foliis longe petiolatis orbiculato-cordatis obtuse subacuminatis basi 5-7 nerviis utrinque adpresse puberulis, pedunculis masculis racemoso-paniculatis folio longioribus, fœmineis dense fasciculatis, bracteis minimis deciduis.—Ramuli novelli pilis reflexis puberuli, demum glabrescentes, striati. Folia vix brevissime peltata, 2-3 poll. longa et lata, infra apicem sæpe sinuato-contracta, apice in fœmineis obtusissima cum mucronula, in masculis mutica, obtusiuscula. Racemi fœminei numerosi, plerique pollicares, villosi. Bracteæ lineares minutæ et citissime deciduæ. Flores pedicellati secus rhachin fasciculati,

in fasciculis numerosi. Sepalum lineare minimum cito deciduum. Ovarium et bacca omnino C. *andromorphæ.* Racemi masculi parum ramosi, 3-4 pollicares, villosi, floribus iis C. *Pareiræ* similibus.—British Guiana, *Schomburgk, n.* 677 (female specimens), and n. 221 of the 1841 Collection (male specimens). This plant differs from C. *andromorpha,* D.C. chiefly by the pubescent foliage.

NYMPHÆACEÆ.

739. Victoria *regia, Lindl.* The only specimens of this splendid plant, sent to this country by Mr. Schomburgk, were those preserved in spirits from which Dr. Lindley made his description, and two young leaves, portions of which were distributed to some of the subscribers. I have not myself had an opportunity of examining the flowers or fruit.

740. Cabomba *aquatica, Aubl. Pl. Gui.* 1. *p.* 321. t. 124. —British Guiana, *Schomburgk* (*n.* 213 *of the Collection of* 1841). Surinam, *Hostmann, n.* 82.

SARRACENIACEÆ.

741. Heliamphora *nutans, Benth. Trans. Soc. Linn. Lond. v.* 18, *p.* 432, *t.* 29.—Moist Savannahs on Mount Roraima, *Schomburgk,* n. 1050.

TERNSTRŒMIACEÆ.

742. Ternstrœmia *Schomburgkiana* (sp. n.), foliis oblongis v. obovato-oblongis obtusis retusisve basi angustatis integerrimis v. minute crenulatis coriaceis subaveniis, pedicellis flori vix æquilongis, sepalis petalisque acutis. Cum diagnosi T. *brevipedis,* DC. convenit, sed folia vix 2 poll. longa, nec unquam pollice latiora. Tota glaberrima. Folia supra nitida, subtus opaca, margine recurva, crenulis minutissimis interdum notata; venæ in vetustioribus interdum nonnullæ observantur. Pedunculi circa 4 lin. longa. Sepala 2 lin. longa, ovata, acuta, crassa. Petala calyce breviora, basi

breviter connata. Stamina petalis breviora.—Dry Savannahs near the Roraima mountains, *Schomburgk.*

743. T. *crassifolia* (*sp. n.*), foliis obovatis v. obovato-oblongis obtusis minute crenulatis basi cuneatis crasso-coriaceis aveniis, pedicellis flore sublongioribus, sepalis orbiculatis obtusissimis.—Præcedenti affinis. Folia crassiora, proportione breviora. Flores multo minores, sed in specimine manco a vermibus fere destructi.—Near Roraima, *Schomburgk.*

744. Bonnetia *sessilis* (*sp. n.*), ramulis angustatis, foliis sessilibus obovato-ellipticis obtusissimis leviter venosis, pedicellis brevissimis unifloris.—Frutex ramosissimus. Folia ad apices ramulorum conferta, 1-1½ pollicaria, basi parum angustata, nervo medio basi dilatato, venis subparallelis leviter prominentibus, margine sæpe tenuiter nigro-punctato. Pedicelli crassi, angulati, vix 2-3 lin. longi. Sepala ovata, concava, coriacea, interiora semipollicaria. Petala orbiculata, ultra-pollicaria. Stamina numerosissima, libera. Antheræ oblongæ. Stylus staminibus longior, apice in specimine a vermibus destructus. Ovarium triloculare, ovulis creberrimis imbricato-adscendentibus.—Roraima mountains, *Schomburgk, n.* 1046.

745. Archytæa *multiflora* (*sp. n.*), foliis sessilibus oblongis v. oblongo-ellipticis basi angustatis coriaceis supra nitidis, pedunculis compressis apice multifloris.—Frutex 12-15 pedalis, glaberrimus. Folia 3-4 poll. longa, 1-1½ poll. lata, obtusiuscula, nervo medio basi dilatato, venis pinnatim dispositis reticulatis prope marginem confluentibus in paginâ superiore prominentibus. Pedunculi axillares, folia parum superantes, rigidi, fere ancipites. Flores ad apicem 5-10, capitati. Pedicelli brevissimi, crassi, singuli ad axillam bracteæ subtendentis ovatæ v. ovato-oblongæ concavæ coriaceæ nitidæ; harum exteriores subsemipollicares, interiores minores. Adsunt etiam ad basin pedicellorum exteriorum bracteolæ 2 minimæ, in interioribus sæpe deficientes. Sepala 5, ovata, valde imbricata, subæqualia, exteriora interdum dorso strigis paucis onusta. Petala circa 8 lin. longa,

obovato-oblonga, basi in unguem angustata, rosea. Stamina petalis subæquilonga, in phalanges 5 ultra medium connata. Antheræ parvæ, versatiles, didymæ. Ovarium sessile, glabrum, conicum, 5-loculare, ovulis in quoque loculo 6-8, a basi adscendentibus. Stylus simplex, staminibus longior, apice stigmatifero obscure 5-angulato. Capsula calycem vix excedens, uti semina omnino cum descriptione A. *trifloræ* convenit.—Near the brook Roné, 5000 feet above the level of the sea (Roraima Expedition), *Schomburgk.*

746. Caraipa *Richardiana, Camb. Mem. Ternstr. p.* 46, *t.* 3. British Guiana, *Schomburgk,* (*n.* 175, *Coll.* 1841).

747. C. *laxiflora (sp. n.),* foliis alternis oblongo-ellipticis obtuse acuminatis, panicula terminali laxa multiflora, ovario tomentello.—Pluribus notis cum descriptione C. *fasciculatæ.* Camb. convenit, sed folia minora angustiora, et panicula semipedalis, basi foliosa, pluries ramosa, ramis demum dichotomis. Calyx linea brevior. Petala 2 lin. longa, lato-ovata, extus tomentella, apice ciliata. Stamina breviter connata. Antheræ ovato-globosæ. Connectivum crassiusculum, apice vix excavatum. Ovarium tomentellum, 3-loculare. Ovula in quoque loculo 2, collateralia, pendula. Stylus brevis, stigmate obsolete trilobo.—Tree 40-50 feet high, flowers fragrant, on the Rio Quitaro, *Schomburgk,* n. 583.

748. C. *leiantha* (sp. n.), glaberrima v. panicula juniore leviter ferruginea, foliis suboppositis obovali-ellipticis oblongisve obtusis venosissimis pellucido-punctatis, panicula pyramidata multiflora, petalis glaberrimis lucidis.—Arbor 40-pedalis, ramulis subteretibus. Folia pleraque opposita v. suprema alterna, exstipulata, 2-4 poll. longa, 1-2 poll. lata, acutiuscula v. sæpius obtusa, basi angustata, venis parallelis crebris, venulis reticulatis prominentibus, punctis pellucidis crebris, petiolo semipollicari. Panicula basi foliosa, parce ramosa, subsemipedalis, ramulis non divaricatis. Bracteæ sub pedicellis lanceolato-subulatæ, acutissimæ, 1-3 lin. longæ. Pedicelli bracteis paullo longiores, sæpe bracteolis 1-2 parvis onusti. Sepala vix 1 lin. longa, acuta. Petala 2½ lin. longa, ovata, obtusiuscula, æstivatione convo-

luto-imbricata, alba, siccitate lucida. Stamina numerosissima, libera. Ovarium subglobosum, glabrum, loculis 3 uniovulatis, ovulis lateraliter affixis. Stylus petalis subbrevior, stigmate crassiusculo trilobo.—On the Rio Negro, *Schomburgk, n.* 935.

749. Mahurea *exstipulata* (*sp. n.*) , glaberrima, foliis exstipulatis oblongo-lanceolatis basi cuneatis, sepalis orbiculatis obtusis.—Frutex elatus v. arbor parva. Folia angustiora et magis acuminata quàm in M. palustre, 3-4 poll. longa, 1 poll. lata, coriacea, venis primariis pinnatim dispositis, venulis reticulatis creberrimis, areolis pellucido-punctatis. Racemi subsemipedales. Pedicelli 6-12 lin. longi, uniflori v. inferiores ramosi 2-3-flori. Flores rosei. Sepala inæqualia, majora 3 lin. longa et lata, concava, extus subcanescentia. Petalorum nonnisi fragmenta suppetunt. Stamina interiora basi leviter connata. Stylus simplex, staminibus longior. Stigma trilobum? Ovarium glabrum, 3-loculare, ovulis numerosissimis deorsum imbricatis.—Banks of rivers and brooks in the Serra Pacaraime, *Schomburgk, n.* 1041.

750. Catostemma *fragrans*, gen. nov.—Banks of rivers British Guiana, *Schomburgk, n.* 280.

Char. Gen. CATOSTEMMA. Calyx basi cupuliformis, limbo bilobo, laciniis æstivatione imbricatis. Petala 5, perigyna, basi breviter pentadelpha, filamentis filiformibus, antheris erectis, loculis 2 longitudinaliter dehiscentibus. Ovarium liberum, sessile, triloculare. Ovula in quoque loculo 2, collateralia, ex angulo interno adscendentia. Stylus filiformis, apice breviter trifidus, laciniis acutis apice breviter et oblique stigmatiferis. Fructus.....

C. *fragrans.* Arbor 50-pedalis, ramulis subcanescentibus. Folia alterna, obovato-oblonga, obtusa v. retusa, mucrone subtus recurvo, 2-4 poll. longa, 1-2 poll. lata, integerrima, basi parum angustata et in petiolum angustata, coriacea, glabra v. nervo medio leviter canescente, penninervia, nervis subtus valde prominentibus, petiolo 3-5 lin. longo furfuraceo-canescente. Pedicelli in axillis supremis numerosi, fasciculati, sesquipollicares, furfuracei, basi bracteis minutis squamiformibus, supra medium squamis 3 inter se distantibus bracteolati. Calycis tubus extus furfuraceus late cupulatus, 2 lin. longus, limbus reflexus, laciniis 2 lato-ovatis membranaceis concavis 4-5 lin. longis; æstivatio leviter imbricata videtur at alabastrum inapertum non vidi. Petala sub apice tubi calycis inserta, eo longiora, oblonga, valde imbricata, glabra, per anthesin reflexa, post anthesin cum calycis tubi parte superiore circumscissa decidua. Stamina calyci infra petala inserta, numerosissima, petalis breviora, glabra. Ovarium tenuiter tomentosum, subcarnosum. Stylus glaber, staminibus longior.—In the structure of the calyx, this plant differs from other Ternstrœmiaceæ. The ovules are erect as in *Kielmeyera*, *Archytæa* and *Bonnetia*, but appear to be always limited to two. The fruit is unknown, but from the appearance of the ovarium, I should suppose it to be capsular.

751. Ochthocosmus *Roraimæ*, gen. nov. Ternstrœmiaceis affine?—Banks of rivers, near Mount Roraima, *Schomburgk*, *n.* 1037.

Char. gen. OCHTHOCOSMUS. Calyx persistens, 5-partitus laciniis æstivatione imbricatis. Petala 5, persistentia, æstivatione imbricata, leviter perigyna. Stamina 5, petalis alterna, disco tenui intra petala inserta. Antheræ. . . .Ovarium sessile, liberum, ovato-conicum, 5-loculare et dissepimentis incompletis inter ovula semi-10-loculare. Ovula in quoque loculo 2, ex angulo centrali pendula. Stylus filiformis. Stigma capitatum, obsoletissime 5-lobum. Fructus capsularis?—O. *Roraimæ*. Frutex 12-16-pedalis, glaberrimus, ramis erectis subpyramidatis angulatis. Stipulæ parvæ, erectæ, coriaceæ. Folia approximata, brevissime petiolata, late ovalia v. obovata, obtusissima v. emarginata, basi parum angustata, margine remote et breviter crenato-dentata, crenarum sinubus sæpe glanduliferis, coriacea, supra nitidissima, penninervia et reticulato-venosa, subtus opaca et pallida, 2-4 poll. longa 1½-2 poll. lata. Pedunculi in axillis superioribus fasciculati, foliis paullo longiores v. rarius breviores, angulati, fasciculatim

racemosi, 6-10-flori, paniculam parvam efformant foliosam ad apices ramorum. Pedicelli vix linea longiores, singuli ad axillam bracteæ minutæ orti. Flores odorati, parvi. Sepala vix lineam longa, ovalia, glabra. Petala alba, 3 lin. longa, obovato-oblonga, basi angustata, obtusa. Filamenta petalis subæquilonga. Antheræ in specimine meo omnes a vermibus destructæ. Ovarium glaberrimum. Stylus petalis paullo brevior.

This genus differs from Terntrœmiaceæ in its definite stamens, but in most other characters it approaches nearer to them than to any other order I am acquainted with. The habit is somewhat different, as well as the consistence of the petals. The fruit is unknown to me, but, judging from the somewhat enlarged ovaria, it appears to be capsular and likely to open in valves, leaving the central column free.

CLUSIACEÆ.

The undescribed genera and species of this order in the tropical forests of America are probably numerous, but owing to the difficulty of drying specimens, those which are brought home by collectors are few and imperfect, and the great variety of forms observable in both male and female flowers indicate a variety of groups, whether generic or sectional, as yet but very ill defined. Some of the following, which I have referred to published genera, may possibly, therefore, belong to others at present undescribed, but upon which my materials do not enable me to form any decided opinion.

752. Tovomita (Marialvæa) *umbellata* (sp. n.), foliis ovato-ellipticis obtusis v. acutiusculis basi acutis, pedunculis compluribus terminalibus dilatatis apice corymboso-plurifloris, petalis 8, staminibus pluriseriatis, stigmatibus 4 sessilibus.—Affinis ex descriptione *T. macrophyllæ*, Pœpp. Arbor 40-pedalis. Folia petiolata, majora vix 5 poll. longa. Pedunculi ad apices ramulorum umbellam formant sessilem 4-6-radiatum, petiolo æquilongi sunt et valde compressi. Flores parvi, ad apices pedunculorum 3-10, fasciculati, breviter racemosi

v. subumbellati, pedicellis 2-3 lin. longis. Petala majora vix 3-lin. longa. Stamina libera, filamentis crassiusculis, exteriora multo breviora. Ovarium in flore unico vidi staminibus brevius, 4-loculare, loculis uni-ovulatis, stigmatibus 4 ovatis sessilibus. — Flowers greenish yellow and very fragrant, British Guiana, *Schomburgk, n.* 991.

753. Tovomita? (Micranthea?) *myriandra,* (sp. n.), foliis oblongis obtusis basi longe angustatis, panicula terminali pedunculata dichotome corymbosa multiflora, floribus 2-bracteatis 4-sepalis 5-petalis, staminibus numerosissimis in discum hemispherico-depressum confertis, antheris minimis terminalibus.—Folia 3-5 poll. longa, supra medium 1-1½ poll. lata, petiolo brevi, venulis crebris parallelis obliquis supra obscuris subtus prominentibus. Pedunculi communes 1-2 poll. longi, bis terve dichotomi, ramis ultimis trifloris, floribus pedicellatis in corymbum densiusculum dispositis. Bracteæ et sepala orbiculata, interiora 4 lin. longa. Petala 6 lin. longa, obcordata, emarginato-bifida, basi angustata et breviter connata. Stamina brevia creberrima densissimi conferta et quasi agglutinata in discum 3-lin. latum vix 1 lin. altum. Antheræ terminales minutæ biglobosæ. Flores fæmineos non vidi.—British Guiana, *Schomburgk,* (*n.* 34 *and* 80 *of the Coll. of* 1841). This plant has the anthers rather of *Arrudea* than of *Tovomita,* but the calyx is different, and I have seen no hermaphrodite flowers.

754. Clusia *insignis, Mart. Nov. Gen. v.* 3, *p.* 164, *t.* 288.—*C. grandiflora Splitg., Pl. Nov. Surinam, p.* 7?—I have two specimens with male flowers, answering to both descriptions as to structure and form, but intermediate as to size of flowers. Martius's is said to have them 4 inches diameter; those of *Schomburgk's, n.* 100 of the 1841 Collection, are rather more than that even in the dried state; so are also *Hostmann's, n.* 572, from Surinam, also males. In a single specimen from *Schomburgk's* first expedition, the diameter is near 6 inches, and Splitgerber describes his as being 7 or 8 inches diameter.

755. Clusia *cuneata* (sp. n.), foliis longe obovato-v. oblongo-

cuneatis obtusissimis venis crebris divaricatis, panicula (mascula) trichotoma pluriflora, petalis subsenis pollicaribus, staminibus numerosissimis, antheris obtusis connectivo ultra loculos non producto.—Folia majora 5 poll. longa, 2 poll. lata, basi longe angustata, suprema multo minora. Panicula in pedunculo terminali bipollicari divaricato-trichotoma, in specimine suppetente 13-flora. Bracteæ ad ramificationes parvæ, ovatæ, concavæ. Pedicelli ultimi 3 lin. longi. Bracteolæ 2. Sepala 5, exteriora orbiculata, interiora petaloidea. Petala 6? apice late obovato-orbiculata, basi in unguem latam brevem angustata, ex sicco alba v. flava videntur. In centro floris, in disco carnoso crassiusculo, stamina oriuntur numerosissima, filamentis brevibus tenuibus in antheram oblongam incrassatis; loculi lineares introrsi, connectivo angusto apice nudo v. gutta terminato, nec (ut in C. insigni) appendiculato. British Guiana, *Schomburgk.*

756. Havetia *flavida* (sp. n.), foliis obovatis oblongisve obtusis basi longe angustatis, paniculis subsessilibus laxe trichotomis ramosissimis, staminibus 4, filamentis connatis, antheris liberis.—Arbor 20-pedalis. Folia (ramorum floralium) 2-4 poll. longa, venulis crebris tenuibus parallelis notata ut in icone H. *laurifoliæ* depicta at apice obtusiora. Paniculæ amplæ, pedunculo communi sæpius brevissimo, ramis compressis valde divaricatis, ultimis trifloris, flore intermedio sessili, lateralibus pedicellatis. Bracteæ sub ramificationibus parvæ, ovatæ. Bracteolæ sub flore minutæ. Flores magnitudine *H. laurifoliæ.* Sepala orbicularia, linea paullo longiora. Petala orbiculata, crassa, carnosa, sordide flavescentia, per anthesin conniventia, sepalis longiora. Flores in specimine omnes masculi. Filamenta in corpusculum tetragonum turbinatum connata. Antheræ ovato-oblongæ, filamentis paullo breviores, connectivo crassiusculo, antheris erectis longitudinaliter dehiscentibus.—British Guiana, *Schomburgk, n.* 317.

757. Garcinia *macrophylla, Mart. Herb. Fl. Bras. p.* 275? Specimina mascula. Folia 7-8 poll. longa, 2½-3poll. lata. Flores in nodis axillaribus plurimi (6-12) fasciculati, parvi, pedicellis 9-10 lin. longis. Receptaculum crassissimum.

Stamina plurima, filamentis brevibus.—Falls of Varepoota, British Guiana, *Schomburgk*, *n.* 523.

758. Garcinia? *parviflora* (sp. n.), ramulis compressis, foliis oblongo-ellipticis submembranaceis, pedicellis (masculis) axillaribus fasciculatis tenuibus 1-3-floris flore multoties longioribus.—Specimen unicum arboris parvæ. Folia semipedalia, basi angustata, brevissime petiolata, parallele costato-nervosa, multo tenuiora quam in solito more Clusiacearum. Pedunculi rigiduli etsi tenuissimi, alii semipollicares uniflori, alii in pedicellos tres uniflores semipollicares divisi. Bracteolæ parvæ, rigidæ, acutæ, ad basin pedunculorum et pedicellorum. Flores parvi. Sepala 4, parum inæqualia, vix lineam longa. Petala 4-5, sepalis duplo longiora. Stamina 20-30, disco carnosulo inserta, libera, antheris ovatis. Ovarii vestigium nullum vidi.—On the Carawiemie mountains, *Schomburgk*.

759. Calophyllum *lucidum* (sp. n.), racemis axillaribus paucifloris, sepalis 2 ovalibus, petalis 4 oblongis, staminibus numerosis, filamentis anthera oblongo-lineari subduplo longioribus, stylo ovario subæquilongo, stigmate peltato.—Arbor ramis divaricatis. Folia iis C. *Brasiliensis* similia, nunc acuminata v. acutiuscula, nunc obtusissima v. emarginata, basi angustata, supra nitidissima, venis minus quam in C. *Calaba* prominentibus. Racemi subbipollicares, 5-9-flori. Pedicelli semipollicares. Bracteæ lanceolatæ, deciduæ. Flores albi. Sepala concava, late-ovalia at angustiora quam in C. *calaba*. Petala angustiora, sepalis longiora at iis similia. Stamina circiter 40, petalis dimidio breviora. Antheræ angustiores et minores quam in C. *Calaba*, longiores quam in C. *Brasiliense*. Stylus hujus speciei at stigma minor. Ovarium uniovulatum. Fructus non vidi.—Upper Essequibo, *Schomburgk*, *n.* 514.

MARCGRAVIACEÆ.

760. Marcgravia *umbellata*, *Linn.*—*DC. Prodr.* 1, *p.* 566.—A single specimen from the Roraima expedition, with rather

longer cucullæ, borne on shorter pedicels than in my West Indian specimen, but apparently the same species.

HYPERICACEÆ.

761. Vismia *macrophylla, Humb. et Kunth, Nov. Gen. et Sp. v.* 5, *p.* 184.—Arbor 40-pedalis, ramis patulis. Folia 6-15 poll. longa, 3-5 poll. lata, lanceolata, ovato-lanceolata, ovato-elliptica v. in ramulis lateralibus brevius ovata, plus minus acuminata et basi rotundato-cordata, primo juventute utrinque ferrugineo-pilosa, mox supra glabrata demum nitida, subtus pilis stellatis plus minus ferruginea, nigro-punctata, venis parallelis subtus prominulis percursa. Panicula in ramis majoribus ampla, floribunda (diametro 6-8 poll.), in ramulis lateralibus multo minor, ferrugineo-tomentosa. Sepala ovata, obtusa, dorso ferruginea et striata, intus glabriora, nigro-punctata. Petala fusca, calyce longiora, intus dense lanosa. Androphora 5, lanata, 10-15-andra. Styli 5.—British Guiana, *Schomburgk, n.* 405 (*n.* 75, *Coll.* 1841). I have it also from the Bay of Panama, from Surinam (*Hostmann, n.* 162), and from Bahia in Brazil.

762. V. *Guianensis, Pers.—DC. Prodr. v.* 1, *p.* 542.—British Guiana, *Schomburgk, n.* 182.

763. V. *Cayennensis, Pers.—DC. Prodr. v.* 1, *p.* 543.—British Guiana, *Schomburgk, n.* 607. French Guiana, *Leprieur, Herb. Par. n.* 162. Surinam, *Hostmann, n.* 438.—The leaves are abruptly and obtusely acuminate and usually slightly crenulate towards the apex, as described by Kunth in the V. *rufescens.* The specimens before me do not quite agree with Lamarck's description of the latter species, yet I strongly suspect it is but a variety of V. *Cayennensis.* Hostmann's specimens have rather narrower leaves than the others.

ERYTHROXYLACEÆ.

764. Erythroxylon *campestre, S. Hil.—Mart. Erythrox. p.* 93, *t.* 7.—Pirara, *Schomburgk, n.* 764.

765. E. *passerinum, Mart. l. c. p.* 106? The specimens

before me closely resemble one I have received from Martius under the above name, but the leaves are more acute at the base, and the pedicels are shorter.—British Guiana, *Schomburgk, n.* 627.

766. E. *citrifolium, St. Hil.—Mart. l. c. p.* 114.—British Guiana, *Schomburgk, n.* 590.

767. E. *mucronatum* (sp. n.), foliis coriaceis oblongis v. obovato-oblongis apice obtusis cum mucrone, basi anguste cuneatis, stipulis ramentisque petiolo longioribus, pedunculis nodoso-glomeratis vix petiolo longioribus, calycis laciniis acutissimis petalis oblongis subdimidio brevioribus.—Folia pleraque bipollicaria, apice subplicata, supra nitidula, subtus in sicco rufescentia v. subglauca, venulis parum prominentibus, petiolo 1-2 lin. longo. Stipulæ membranaceæ, acutissimæ, bidentatæ. Ramenti floriferi secus ramos plurimi, non distichi, 2-8-flori. Pedunculi 3 lin. longi, Flores parvi, petalis oblongis. Drupa oblonga, 4 lin. longa.—Pirara, *Schomburgk, n.* 766. I cannot make this plant agree with any of Martius's descriptions, though it comes near both to E. *nitida* and E. *campestris.* The stipules are much longer than in either.

768. E. *rufum, Cav. Diss.* 8, *p.* 404, *t.* 232 *? DC. Prodr. v.* 1, *p.* 575.—Rio Quitaro, *Schomburgk, n.* 545. I have little doubt but that this is the plant described by De Candolle, and is probably Cavanille's species, and I presume it is the one referred by Martius to his E. *nitidum,* though the leaves are much broader and the peduncles longer than described by him in any of his varieties.

769. E. *amplum* (sp. n.), foliis breviter petiolatis amplis oblongo-ellipticis utrinque angustatis subcoriaceis subtus glauco-ferrugineis, stipulis ramentisque petiolo æquilongis v. parum longioribus, floribus dense glomeratis, pedicello flore breviore, stylis a basi liberis.—Pluribus notis cum E. *magnoliæfolio* convenit, sed folia apice minime rotundata et petioli stipulis sæpissime breviores. Ramuli cinerei, novelli læves, fusci, subcompressi. Folia 6-12 poll. longa, medio 2½-3½ poll. lata. apice acuta v. acuminata, basi acuta v. leviter

rotundata, supra demum nitida; subtus in sicco ferrugineo-colorata, subglauca, tactu molliuscula et glabra. Petiolus 3 lin., v. in ramulis vetustioribus 5-6 lin. longus, ramenta stipulis æquilonga, juniora basi arista dorsali mox decidua onusta. Flores in glomerulis sæpius plus quam 12. Pedicellus vix lineam longus. Calycis laciniæ ovatæ, acutiusculæ. Petala oblonga, obtusa, calyce subduplo longiora. Styli graciles. Fructus non vidi.—Barcellos on the Rio Negro, *Schomburgk, n.* 1027.

TRIGONIACEÆ.

770. Trigonia *villosa, Aubl. Pl. Guian.* 1, *p.* 387, *t.* 149, var. angustifolia. Capsulæ sesquipollicares.—On the Essequibo, *Schomburgk, n.* 63 *in the earlier sets, and* 54 *in others.*

771. T. *macrocarpa* (sp. n.), ramulis dense tomentosis, foliis subsessilibus ovato-rhombeis obtusis mucronatis supra pubescentibus viridibus subtus albo-tomentosis, floribus secus ramos paniculæ racemosis.—Frutex elatus, habitu et inflorescentia T. *villosæ,* sed folia latiora, flores majores densiores, petioli stipulis breviores, capsulæ nondum maturæ jam tripollicares.—On the Essequibo, *Schomburgk, n.* 54 *in the earlier sets.*

772. T. *subcymosa* (sp. n.), foliis breviter petiolatis ovali-ellipticis obtusis vix mucronatis supra glabris hirtellisve nitidis subtus albo-tomentosis, ramis paniculæ subdichotome cymosis.—Frutex elatus, ramosus, ramis apice tomentosis demum glabratis. Folia 1½-2-pollicaria. Flores quam in T. *villosa* dimidio minores. Petala lateralia et inferiora angustiora.—On the Essequibo, *Schomburgk, n.* 56 *in the earlier sets,* 63 *in others.*

HUMIRIACEÆ.

773. Humirium *obovatum* (sp. n.), ramulis hirsutis, foliis subsessilibus late obovatis obtusissimis retusisve supra nitidis subtus rufis piloso-hirtis, petalis dorso pubescentibus.—Ramuli teretes, hirsutie molli patente. Folia pleraque 3 poll. longa, supra medium 2 poll. lata, basi cuneata, sessilia

v. petiolo crasso vix lineam longo insidentia, apice sæpius emarginata. Pedunculi communes hirtelli, vix compressi, folio dimidio breviores, apice trichotome ramosi, floribus numerosis parvis. Petala obtusa, linea breviora, dorso pubescentia. Stamina 20. Antheræ pilis aliquot nigris onustæ. Ovarium 5-angulare, 5-loculare, loculis biovulatis. Stylus brevis. Stigma obsolete 5-lobum.—British Guiana, *Schomburgk (n.* 166, *Coll.* 1841*)*.

Amongst Martius's Cayenne plants is a new species, in some respects allied to the preceding one, and which may be thus characterized: H. *subcrenatum*, ramulis hirtellis, foliis subsessilibus ovatis obtuse acuminatis subcrenatis basi cuneatis, cymis folio brevioribus paucifloris, petalis dorso puberulis.—Folia 1-1½-pollicaria, crenaturis inæqualibus sæpe obsoletis. Cymæ fere *H. floribundi* varietatis minoris.

774. H. *Guianense* (sp. n.), glaberrimum, foliis petiolatis ovatis obtusis basi truncatis rotundatis angustatisve, petiolo alato, cymis folio longioribus, petalis glabris.—Frutex 10-12-pedalis, pluribus notis H. *crassifolio Mart.* affinis. Folia minora (pleraque subtripollicaria) proportione latiora, lamina basi interdum obtuse subauriculata. Petiolus late alatus, semipollicaris. Pedunculi sæpe ancipites, dichotomi, floribundi. Flores viridi-flavescentes, magnitudine eorum H. *floribundi*. Stamina 20. Antheræ pilosæ. Ovarium 5-loculare, loculis biovulatis. Stylus elongatus, stigmate 5-radiato. —Savannahs, British Guiana, *Schomburgk n.* 270.

775. H. *floribundum Mart. Nov. Gen. v.* 2, *p.* 145, *t.* 199.—On the Upper Rupunoony and in the Parime Mountains, *Schomburgk*; two single specimens, both belonging to the larger variety mentioned and figured by Martius.

776. H.? *densiflorum* (sp. n.), foliis ovato-ellipticis breviter et obtuse acuminatis basi rotundatis breviter petiolatis, cymis pedunculatis axillaribus lateralibusque dense multifloris, ovario 5-loculare, loculis uniovulatis.—Arbor 60-pedalis. Petiolus semipollicaris, supra planus at non alatus. Folia coriacea, 3-6-pollicaria. Pedunculi pollicares, minute pube-

ruli. Flores numerosi, fere in capitulum condensati, extus tomentoso-puberuli, fere 2-lin. longi. Petala oblongo-linearia. Stamina 20, 4-seriata, adjectis nonnunquam nonnullis minutis sterilibus seriei quinti. Filamenta basic onnata, inæquilonga, complanata, 5 majora petalis alterna apice bidentata, cætera apice attenuata. Antheræ glabræ forma H. *crassifolii* et *floribundi*. Discus hypogynus 10-fidus, laciniis linearibus ovario appressis apice emarginatis. Ovarium globosum, glabrum, carnosum. Ovula oblonga. Stylus brevis. Stigma capitatum, 5-radiatum.—On the Rio Quitaro, *Schomburgk n.* 543. This species differs from the four preceding ones by the single ovules in each cell as well as by its habit, and might be considered generically distinct, were it not that *Hellenia* is also said to include species with 1-ovulated and with 2-ovulated cells. The fruit is unknown to me.

OLACACEÆ.

777. Olax *macrophylla, Benth. in Trans. Soc. Linn. Lond. v.* 18, *p.* 678.—Mount Padowan, *Schomburgk.*

No. 5380 of Gardner's Brazilian Collection is the *Dulacia singularis* of Vellozo's Flora Fluminensis. It is an *Olax,* quite distinct from my O. *pauciflora*, to which I had referred it with doubt, and may be thus characterised: O. *Vellosiana* foliis ovatis acuminatis (in O. *pauciflora* obtusis) ramulisque glaberrimis, racemis axillaribus paucifloris (3-5-floris), calyce basi ovario adnato parte libera brevissima truncata, staminibus sterilibus bifidis, ovario pubescente, fructu ovoideo.—Folia plerumque bipollicaria.

No. 1957 of Gardner's Collection from the neighbourhood of Crato is very near O. *Vellosiana* and O. *pauciflora*, but has much longer leaves and narrow fruits. It may be thus defined: O. *Gardneriana*, foliis ovato-lanceolatis acutiusculis ramulisque glaberrimis, racemis plurifloris (4-12-floris) calyce basi ovario adnato parte libera truncata subsinuata, staminibus sterilibus bifidis, ovario pubescente, fructu ovato-oblongo.—Folia pleraque tripollicaria.

The fruit of the above two species only differs from that of the East Indian species by the closer adherence of the calyx, the upper part of which, however, remains more or less free, and never entirely covers the fruit.

Nos. 2516, 2787, 3040, 5378, 5379, and 5974 of Gardner's Brazilian plants, and 194 of Hostmann's Surinam plants, all belong to *Heisteria*, to which genus must also be referred *Hesiodia perianthomega*, Vell. Fl. Flum. v. 3, t. 140.

No. 938 of Gardner from Pernambuco, and 395 of Hostmann from Surinam are the *Ximenia Americana*, and No. 1478 of Gardner and 2787 of Blanchet appear to be a new species of *Ximenia*.

No. 5380 bis, of Gardner, from a single straggling shrub found in a forest at Tejuca, about 14 or 15 miles from Rio Janeiro, is a very singular plant, apparently allied to Olacineæ, but unfortunately past flower in the specimens found. It has the habit, foliage, and inflorescence of a *Heisteria*. My specimens bear ovaries in different states of development after the fall of the corolla. They are fleshy and pulvinate, one-celled inside, with one ovule pendulous from a lateral placenta. The calyx is persistent, very small, and bluntly 6-lobed, or rather with three emarginate lobes. Between the calyx and ovary are three cupshaped truncated disks one within the other. The outer one, considerably larger than the calyx, appears to increase gradually as the ovary swells; within it the second disk, larger than the first, grows more rapidly close round the ovary, the third, or innermost disk, is quite short, remains concealed within the second, and does not appear to increase at all. The ovary is very obtuse, and crowned with the remains of a filiform style, from the base of which may be traced six diverging lines. Velloso's rude figure of *Epigenia crenata* (Fl. Flum. v. 4, t. 140) has some resemblance to this plant—at least he figures one or two disks to one of the detached fruits. His E. *integerrima* is probably a *Styrax*.

Allied to *Olax* is the following new genus among Martius's Cayenne plants:—

PTYCHOPETALUM. Calyx minimus, obsolete 5-dentatus.

Petala 5, linearia, æstivatione valvata, marginibus supra medium inflexis crispis, infra medium intus barbatis. Stamina 10, filamentis liberis basi cum petalis subcohærentibus. Ovarium oblongum, liberum, uniloculare. Ovula (3?) minuta, ab apice placentæ erectæ ovario lateraliter adhærentis pendula. Stylus filiformis. Stigma capitato-trilobum. Species unica, *P. olacoides*. Frutex? habitu *Olacis, glaberrimus*. Folia alterna, ovato v. oblongo-lanceolata, acuminata, breviter petiolata, exstipulata, 3-4 poll. longa. Racemi axillares, breves, ramosi, pauciflori. Pedicelli 2-3 lin-longi, singuli ad axillam bracteæ minutæ squamiformis, bracteis infimis paullo majoribus sterilibus approximatis. Corollæ 3-lin. longæ, extus glaberrimæ.

778. Pogopetalum *orbiculatum*, (*Benth. in Trans. Soc. Linn. Lond. v.* 18, *p.* 685, *t.* 42,) foliis orbiculatis obtusis subtus ramulis floribusque albidis, petalis ovatis, ovario hispido.—Dry Savannahs, Rio Padawire, *Schomburgk*.

779. P. *acuminatum*, (*Benth. l. c. p.* 685,) foliis ovatis oblongisve longe acuminatis subtus vix pallidioribus pube rara hirtellis, ramulis floribusque leviter canescentibus, petalis ovali-oblongis, ovario glabro.—High banks of the Rio Negro, *Schomburgk n.* 970.

The two following are additional species of *Pogopetalum*:—

P. *acutum*, foliis ovato-oblongis acuminatis subtus pube appressa canescentibus, ramulis floribusque tomentosis, petalis lineari-lanceolatis acutis revolutis intus dense lanatis, ovario hispido.—Folia 3-4-pollicaria v. in ramis vegetioribus duplo majora. Cymæ densæ. Flores primo intuitu iis *Ximeniæ* similes. Petala longiora quam in præcedentibus, intus densissime lanata. Stamina petalis paullo breviora.—Cayenne, *Martin*.

P. *nitens*, foliis ovato-oblongis ovatisve acuminatis subtus pube nitente incanis v. rufidulis, ramulis floribusque incanis, petalis ovali-oblongis apice inflexo parce lanatis, ovario glabro.—Folia 3-4 poll. longa. Cymæ laxæ. Flores fere P. *acuminati*.—Province of Goyaz, Brazil, *Gardner n.* 3309, and probably in the same Province, *Pohl*, Rio Preto, in the

Province of Pernambuco, *Gardner n.* 2941, Serra Acurua, Province of Bahia, *Blanchet n.* 2889.

RHIZOBOLACEÆ.

780. Anthodiscus *trifoliatus, G. F. W. Mey. Prim. Fl. Esseq. p.* 194. *Benth. in Trans. Soc. Linn. Lond. v.* 18, *p.* 237, *t.* 20.—On the Essequibo and Rupunoony, *Schomburgk n.* 512.

(*To be continued.*)

An Arrangement and Definition of the Genera of Ferns, with observations on the affinities of each genus. By J. Smith, A.L.S.

(*Continued from p.* 668. *of vol.* 1.)

DIV. II. GLEICHENIACEÆ. *R. Br.*

Sporangia globose or pyriform, usually compressed on their interior side, unilocular, sessile, opening vertically, furnished with a complete transverse ring. *Sori* round, superficial or immersed, naked or furnished with indusioid hairs.

Obs. In my remarks under *Cyatheæ,* I have shown that the direction of the ring is not, in certain cases, worthy to be adopted as a primary character; and although the form and sessile attachment of the sporangia of *Gleicheniaceæ,* may also, to a degree, influence the direction of the ring, as in *Cyatheæ* and *Hymenophylleæ,* still, with regard to this family, it must not be too strictly viewed as a structure of little value. Even setting aside the difference in structure of the sporangia, the very distinct habit of *Gleicheniaceæ* is of itself sufficient to warrant us in keeping them separate from *Polypodiaceæ.* They cannot be naturally associated with any genus of ferns, except, indeed, *Matonia,* which genus has several characters in common with the present group, especially its general habit, and the sori being composed of a definite number (few) of sessile sporangia. Thus it has become a question with me whether it would not be more natural to consider *Matonia* an indusiate genus of *Gleicheniaceæ*, rather than to retain it as an anomalous genus in *Aspidieæ*.

Gleicheniaceæ are readily discriminated from all other ferns by the almost constant dichotomous character of their fronds, only two species being known to have linear pinnate or pinnatifid fronds. The ultimate pinnæ or branches are usually deeply pinnatifid, or the laciniæ are distant and sessile, the pinnæ being then pinnate, in every respect not unlike such ferns as *Polypodium pectinatum*, &c. About 30 species have been described; but their very great similarity and wide geographical range render it very difficult to determine what are truly distinct species. From examination, I am induced to think that there may be about 20, and that under local influences they exhibit a difference in aspect, as in being more or less glaucous, smooth or tomentose, &c. which has been the cause of more species being described than really exist. The whole of the species agree with the genus *Gleichenia* as characterised by Mr. Brown, but this admits of being separated into at least two natural groups or genera, the first containing the original species of *Gleichenia*, and the second consisting of those species characterised by Willdenow under his genus *Mertensia*. A solitary species constitutes the genus *Platyzoma* of R. Br., which differs from true *Gleichenia* more by its simple (not forked) fronds, than in any very evident and distinct character of the fructification.

126. PLATYZOMA, *R. Br.*

Veins simple, obscure, free. *Sporangia* terminal, 2-4, forming round *sori;* margin of the pinnæ revolute, indusiiform, conniving, constituting a concave farinose cyst, that includes the sori.

Rhizoma *creeping, densely paleaceous*. Stipes *simple*. Sterile fronds *linear-filiform, 2-3 inches in length:* fertile *linear, pinnate, 3 to 12 inches long;* pinnæ *sessile numerous,* $\frac{1}{16}$ *of an inch in length, orbicular, revolute and plicate.*

Species. P. microphyllum, *R. Br.*

Illust. Hook. gen. fil. t. 41. C.

Obs. This rare fern was discovered by Mr. R. Brown in the year 1802, on the shores of the Gulf of Carpentaria and east coast of New Holland, where we believe no collector has met with it since; but it appears, on the authority of specimens in the herbarium of Sir W. J. Hooker, to be also a native of Madagascar. I have already noticed that its possessing simple fronds is the only character to distinguish it, as a genus, from the following.

127. GLEICHENIA, *Sw. Willd. Presl.*

(Calymella, *Presl.*)

Veins pinnate, or pinnately forked. *Venules* free, the lower exterior one fertile. *Sporangia* terminal, 2 to 4, superficial or immersed in a concave cyst, forming round *sori*. *Pinnules* either plane or revolute and cucullate, constituting an universal indusium.

Fronds *from 6 inches to 1½ foot high, usually rigid, once or oftener dichotomously branched, the branches (or pinnæ) pinnatifid or pinnate; pinnules or laciniæ minute, plane or plicate and concave, smooth, glaucous, tomentose or squamose.* Sori *solitary.*

Examp. 1. G. polypodioides, *Sw.* 2. G. rupestris, *R. Br.* 3. G. alpina, *R. Br.* 4. G. microphylla, *R. Br.* 5. G. dicarpa, *R. Br.* 6. G. heciostophylla, *A. Cunn.*

Illust. Hook. gen. fil. t. 41. A.B. *Hook et Grev. ic. fil. t.* 58.

Obs. From the above character, it will be observed that the sporangia are either superficial or immersed; which difference Presl has adopted for constituting two genera; retaining under *Gleichenia* those individuals with immersed sori, and placing, under his genus *Calymella*, two species characterised as possessing superficial sori. But a careful examination of the species induces me to think that this peculiarity is not worthy of consideration as a generic distinction, more especially since all the species agree in habit.

The immersed sori are well exemplified in *Gleichenia polypodioides;* in that species the sori consist of four decussate sporangia sunk in a round cavity, each sporangium being seated in a cell; between each cell is a slightly elevated ridge, which, on the removal of the sporangia, exhibits the form of a cross, with the punctiform receptacle in its centre.

128. MERTENSIA, *Willd. Sw. Presl.*

(Gleicheniæ sp. *R. Br. et Auct.*, Sticherus, *Presl.*)

Veins pinnately or simply forked, evident. *Venules* direct, free, the exterior one fertile. *Sporangia* medial, superficial, 3 to 8 or more, constituting round globose naked, or trichophorous *sori.*

Rhizoma *creeping.* Fronds *rigid, from* 1 *to* 6 *feet high, many times dichotomously branched (seldom simple) and pinnatifid;* branches (pinnæ) *pinnatifid; laciniæ uniform, linear, entire, rarely dentate, smooth, glaucous or villose.*

Examp. 1. M. simplex, *Desv.* 2. M. nervosa, *Kaulf.* 3. M. glaucescens, *Willd.* 4. M. Hookeri, *J. Sm.* (Gleichenia Hermanni. *Hook. et Grev. ic. fil. t.* 14). 5. M. dichotoma, *Willd.* (Gleichenia Hermanni, *R. Br.*) 6. M. rigida, *J. Sm.* 7. M. bifurcata, *Blume.* 8. M. furcata, *Willd.* (Mertensia decurrens, *Radd.*) 9. M. immersa, *Kaulf.* 10. M. flabellata, *R. Br.* 11. M. Cunninghamii, *Hew.* 12. M. gigantea, *Wall.* 13. M. excelsa *J. Sm.*

Illust. Hook. et Bauer gen. fil. t. 39, *Hook. et Grev. ic. fil. t.* 14, 15.

Obs. The larger habit, plane laciniæ, evident venation and medial sori, readily distinguish this genus from *Gleichenia.* The genus *Sticherus* of Presl is by that author characterised as distinct from *Mertensia,* by its reticulated venation. I possess genuine specimens of one of the species (*Gleichenia lanigera D. Don*) and also of what I take for the *M. lævigata Willd.* (which is a doubtful species of *Sticherus,* according to Presl.) Neither of these exhibits reticulated veins, and the very great similarity of all the species in this genus renders it difficult to determine what are really distinct. Instead of Don's *Gleichenia lanigera* being the type of a genus, I cannot make it even distinct from the *Mertensia dichotoma* of Willdenow.

Div. III. SCHIZÆACEÆ. *Mart.*

Sporangia oval, oblong, rarely globose, sessile, apex striated, rayed, opening lengthways (vertically) on their exterior side, produced on contracted marginal lobules, or special appendices, in the form of simple, or racemose, or paniculate, contracted fronds or spikelets.

Obs. The oval sporangia, furnished with a striated apex, analogous to a transverse ring, readily distinguish *Schizæaceæ* from either of the preceding divisions. The nearest relationship is with *Osmundaceæ*, to which the species were formerly annexed; but *Osmundaceæ*, as now restricted, differs in habit and in the structure of the sporangia. The number of species forming *Schizæaceæ* amounts to about forty, and these have been hitherto comprehended under four genera, which, with the exception of a few species, agree in having free, direct, venation; one species of *Lygodium* and a few species of *Anemia* exhibiting anastomose veins. Although these few species do not possess any peculiarity in habit, still I have deemed it necessary, in order conspicuously to mark their difference in venation, to arrange them under two separate genera.

129. LYGODIUM, *Sw.*

(Hydroglossum, *Willd.* Ugena, *Cav.*)

Veins free. *Fertile appendices* marginal, forming numerous linear spiculæ, composed of two rows of indusiate imbricate cysts, each cyst containing an oval *sporangium*, which is attached by its interior side, and resupinate.

Rhizoma *cæspitose.* Fronds *twining, scandent.* Pinnæ *conjugate, lobed, palmate, pinnatifid, or pinnate; the segments sometimes entirely contracted, forming a dense sporangiferous* *rachis.* Veins *of the fertile spicula pinnate ;* venules *arcuate bearing the sporangia on their superior side.*

Examp. 1. L. flexuosum, *Sw.* (L. circinatum, *Sw.* L. longifolium, *Sw.* L. dichotomum, *Sw.* L. pedatum, *Sw.* 2. L. scandens, *Sw.* (L. volubile, *Sw.* L. hastatum, *Sw.* L. pinnatifidum, *Sw.*) 3. L. Japonicum, *Sw.* 4. L. palmatum, *Sw.*

Illust. Hook. et Bauer gen. fil. t. 28, *Hook. et Grev. ic. fil. t.* 153.

Obs. The peculiarly scandent and permanent character of the fronds of this genus readily distinguishes its species from all other ferns; they are found chiefly within or near the tropics, the same kinds being common to both hemispheres; for after a careful examination of numerous specimens, I can detect no permanent character, whereby to distinguish the common *Lygodium volubile* of America from the also common *Lygodium scandens* of Asia. It is evident to me that many species, described as distinct by authors, are only variations of a very few species; the more or less sterile or fertile state of the pinnæ and other circumstances often presenting such discrepancies of form, on the same plant, at the same time or at different periods of its growth, that viewing these forms separately there is little or no difficulty in considering them so many distinct species. Sprengel enumerates twenty-three species, which, according to my view, may be reduced to six or eight. If such be not the case, and allowing every deviation in form of this genus to be species, then I see no limits as to number, and the impossibility and uselessness of trying to give them distinct specific characters is to me a reason for considering the species to be few.

130. LYGODICTYON, *J. Sm.*

(Lygodii sp. *Schk.* Hydroglossi sp. *Willd.*)

Fertile appendices marginal, forming numerous spiculæ, composed of two rows of indusiate imbricate cysts; each containing an oval *sporangium,* attached by its interior side and resupinate. *Veins* reticulated.

Habit *as in Lygodium*; *differing in the petiole of the sterile pinnules being articulated.*

Species. Lygodictyon Schkuhrii, *J. Sm.* (Lygodium reticulatum, *Schk.* Hydroglossum polycarpum, *Willd.* Ophioglossum scandens, *Forst.*)

Illust. Schk. crypt. t. 139. *Hook. gen. fil. t.* 111. B.

Obs. Agreeing in habit with the preceding, but differing in the reticulated venation and in the petioles being articulated.

131. SCHIZÆA, *Sw. J. Sm.*

(Lophidium, *Rich.* Rhipidium, *Bernh.*)

Fertile appendices terminal, forming a reflexed pinnate *crest* of linear *segments,* which have an inflexed indusiiform margin. *Sporangia* oval, vertical, arranged in a compact row on each side of the midrib of the segments.

Rhizoma *cæspitose.* Fronds *simple and linear, or unusually dichotomously multipartite, or entire and flabellate, each lacinia bearing a pinnate reclinate fertile crest.* Segments *linear, unilateral, vertical, and oppositely conniving.*

Examp. 1. S. pectinata, *Sm.* 2. S. pusilla, *Pursh.* 3. S. rupestris, *R. Br.* 4. S. dichotoma, *Sw.* 5. S. bifida, *Sm.* 6. S. elegans, *Sm.* 7. S. Flabellum, *Mart.*

Illust. Hook. et Bauer, gen. fil. t. 19.

132. ACTINOSTACHYS, *Wall.*

(Schizææ sp. *Sw. Schk.*)

Fertile appendices terminal, forming a digitate *crest* of linear segments; their margin reflexed, indusiiform. *Sporangia* oval, vertical, arranged in two compact rows on either side of the costula of each segment.

Fronds *simple, linear, costate, compressed or triquetrous at the base, their apex multipartite or sometimes bifid, forming* *two unequal fascicles of fertile segments, which are vertically unilateral and oppositely conniving.*

Species. 1. A. digitata *Sw.*, 2. A. trilateralis, *Schk.*

Illust. Hook. et Grev. ic. fil. t. 54. *Sw. syn. fil. t.* 4, *f.* 1. *Schk. crypt. t.* 136.

Obs. Mr. R. Brown has long ago remarked that the *Schizæa digitata* of Swartz differs from the rest of the genus, by its fertile appendices being digitate, and the sporangia crowded; whereas in true *Schizæa,* the terminal appendix is pinnate and the sporangia produced in two rows (that is *one* row on each side of the midrib of the pinnæ). In the two species that I have placed under *Actinostachys,* the sporangia are borne in *two* rows on either side of the midrib, the attachment of the two rows being on the same line; consequently, those of the outer row are, by the pressure of the inner row, constricted at their base, and somewhat oblique. These differences, with a slight disparity in habit, distinguish the two genera.

133. ANEMIA, *Sw. J. Sm.*

Fertile fronds tripartite; the two opposite segments contracted, erect, constituting two unilateral sporangiferous compound panicles; the third segment sterile, with forked, direct free venation. *Sporangia* oval, vertical, naked.

Fronds *stipitate, pinnate, bipinnate, or decompound; the fertile ones always tripartite, the sterile segment usually spreading, and much shorter than the erect fertile appendices.*

Examp. 1. A. oblongifolia, *Sm.* 2. A. hirta, *Sw.* 3. A. collina, *Radd.* 4. A. caudata, *Kaulf.* (A. Mandioccana, *Radd.*) 5. A. tenella, *Sw.* (A. repens, *Radd.*) 6. A. flexuosa, *Sw.* 7. A. deltoidea, *Sw.* 8. A. adiantifolia, *Sw.*

Illust. Hook. gen. fil. t. 90. *Hook. et Grev. ic. fil. t.* 16.

Obs. Swartz, Willdenow and others arranged the species of this genus under two distinct forms; the first containing those that have their fertile fronds tripartite, two of the branches being contracted and fertile, while the other branch is sterile; in the greater number so characterised, the venation is free; but in probably three species the venation is anastomosely reticulate. I therefore propose to retain as true *Anemiæ* the ones with free veins; and, in order to mark the reticulated venation, to constitute of them the following genus *Anemidictyon.* The second section of Swartz contains four presumed species, differing from the first by their fertile fronds not being tripartite, but rising uniformly and direct from the rhizoma; on examining the authorities for the species so characterised, I find that three of them, viz: *Anemia bipinnata, Sm. A. verticillata, Sm.* and *A. filiculifolia, Sm.* must be entirely excluded from any relationship with the genus; at least judging from the only evidence at present afforded by the figures of Plumier quoted by Swartz as being species of *Anemia.* It appears to me that Swartz had not seen specimens, and that he depended for his description entirely on these figures, and on Linnæus having quoted them as species of *Osmunda,* which tab. 155 evidently is. Therefore, the only original described species of *Anemia,* possessing distinct fertile fronds, is the *A. aurita* of Swartz, of which but few specimens exist in herbaria. To this section must also be referred a species, noticed by Swartz but not described, his sole authority being a figure in *Ammann. Com. Petrop.* 10, *p.* 295, *t.* 19. Specimens, apparently, belonging to this species, exist in the Linnæan herbarium; and, in the British Museum, Linnæus has marked his specimen with a query *Osmunda bipinnata,* and from Sir J. E. Smith's writing on the same specimen, it would seem that he viewed it as *Osmunda filiculifolia, Linn.*; but it is evidently a very different plant from either of these species, as adopted by Linnæus from Plumier. Presuming the circumstance of the fertile fronds being distinct (and not three-parted), to prove a sufficient character for keeping these species separate from true *Anemia,* then their affinities will be with *Mohria*; also with two species from Brazil lately described in this Journal by Professor Gardner, under a new genus, which he names *Coptophyllum;* but a careful examination of fine specimens, presented me by that most industrious collector and acute botanist, compels me to differ from him, for I can find no decisive character that will distinguish *Coptophyllum* from *Mohria* ; their habit being the same, departing slightly from true *Mohria* by the fertile fronds being more strictly contracted; although instances are not wanting of fronds of both genera exhibiting more or less contraction of parts. A slight difference is also perceptible in the form of the sporangia, but it is no more than what may be expected from the normal contraction of the frond as compared with *Mohria.*

134. ANEMIDICTYON, *J. Sm.*

(Anemiæ sp. *Sw. et auct.*)

Fertile fronds tripartite; the two opposite segments contracted, erect, constituting two unilateral sporangiferous compound panicles, the third segment sterile. *Veins* forked; *Venules* reticulated; *Sporangia* oval, vertical.

Fronds *stipitate, pinnate;* pinnæ *entire ovato-lanceolate.*

Species. 1. A. Phyllitidis. *Sw.* (A. longifolia, *Radd.* A. cordifolia, *Presl*). 2. A. fraxinifolia, *Radd.* 3. A. densa, *Link.*

Illust. Hook. Gen. Fil. t. 103. *Presl, Reliq. Haenk.* t. 11, *f.* 3.

135. MOHRIA, *Sw. J. Sm.*

(Osmundæ *sp. Linn.* Anemiæ *sp. Sw. Hook.* Coptophyllum, *Gard.*)

Fertile fronds uniform, contracted, usually constituting a rachiform unilateral sporangiferous panicle; margin of the segments inflexed. *Veins* direct, free. *Sporangia* sessile, vertical, oval or nearly globose.

Fronds *cæspitose, rising from a short creeping rhizoma, erect,* 6 *to* 10 *inches high; the sterile bipinnate;* pinnæ *entire, laciniate or multifid, segments linear, dichotomous.*

Species. 1. M. thurifraga, *Sw.* 2. M. crenata, *Desv.* 3. M. intermedia, *J. Sm.* (Anemia intermedia, *R. Br. in Herb. Brit. Mus.* Osmunda bipinnata, *Linn. herb.* exclusive of all descriptions and synonyms). 4. M. Millefolium, *J. Sm.* (Coptophyllum Millefolium, *Gard.*). 5. M. buniifolium, *J. Sm.* (Coptophyllum buniifolium, *Gard.*) 6. M. aurita, *J. Sm.* (Anemia aurita, *Sw.*)

Illust. Hook. gen. fil. t. 104. B. *Schk. crypt. t.* 143. *Sw. Syn. t.* 5. *Hook. Ic. Pl. t.* 477, 478.

Obs. I have, under *Anemia,* assigned my reasons for assigning these six species to *Mohria*; five of them form a truly natural distinct group, the sixth (*M. aurita*), differing only in the pinnules of its sterile frond being entire, but, since it coincides in other characters, the entire pinnules are no reason for its being excluded.

136. TROCHOPTERIS, *Gard.*

Fronds 5-lobed, depressed, the two lower lobes contracted, laciniated, crinite and fertile. *Veins* flabellate, dichotomously forked; *Venules* direct, free; *Sporangia* terminal, sessile, oval, vertical, naked.

Fronds *subrotund, ¾ of an inch long by ½ an inch wide, 5-lobed, villose, depressed, horizontal; becoming successively imbricate; the whole plant forming a flat circular patch, not more than 1½ inch in diameter.*

Species. T. elegans, *Gard.*

Illust. Hook. Lond. Journ. of Bot. 1. *t.* 4. *Hook. gen. fil. t.* 104. A.

Obs. This interesting little Fern has been fully described in this journal by its original discoverer, Professor Gardner. In affinity it comes nearest *Anemia,* of which genus, according to my view, it may be considered a modified form, the two fertile lobes being analogous to the two fertile appendices of *Anemia.* The very dissimilar habit prevents their being associated, and upon the same principle, it is also distinct from *Mohria,* for the fertile lobes are analogous to a fertile segment of the frond in that genus.

DIV. IV. OSMUNDACEÆ, *Mart.*

Sporangia globose, pedicellate, reticulated, unilocular, opening by a vertical slit (bivalved), apex oblique, gibbous, pellucid, destitute of an articulated ring.

Obs. The sporangia being destitute of the radiate apex, distinguish this from the preceding division; but it is to be observed that a structure analogous to *Schizæaceæ*, is, to a certain extent, found in *Osmundaceæ*. On examining a sporangium of this division, a difference is evident in the form of the cellular structure on the interior side, indicating the line of dehiscence, which line passes over the apparent apex of the sporangium, and terminates in a small indistinct striated gibbosity on its exterior side. This gibbosity must be considered as the true apex, which, on account of its obliquity, gives the sporangium the appearance of being cleft vertically into two equal valves; in that respect forming a transition to the following division, *Marattiaceæ*, by the affinity of *Todea* with *Angiopteris*.

The number of described species constituting *Osmundaceæ* does not exceed twelve; their general habit consists in having pinnate or bipinnate fronds, sometimes 6 to 8 feet in height, produced from a thick cæspitose fleshy rhizoma (somewhat analogous to an arborescent rhizoma); the venation is free, and the sporangia are borne on separate contracted fronds; or in some species, only portions of the segments are contracted, and fertile, and, in a few, the sporangia are definitely produced on the venules of but slightly contracted fronds.

137. OSMUNDA, *Linn.*

(Aphyllocarpa, *Cav.* Plenasium, *Presl.*)

Veins forked. *Venules* direct, free. *Fertile fronds*, or some portion of the segments, contracted, rachiform, simple or compound, densely sporangiferous.

Fronds *pinnate.* Pinnæ *entire, serrate, pinnatifid or pinnate; fertile segments terminal, medial, or basial, or the entire frond is contracted and sporangiferous.*

Examp. 1. O. Javanica, *Blume.* (O. Presliana, *J. Sm. in Journ. of Bot.* Nephrodium banksiæfolium and Nephrodium bromeliæfolium, *Presl,* in *Reliq. Hænk.* Asplenium aureum, *Blume. Reinw.* Plenasium banksiæfolium and bromeliæfolium, *Presl. Pterid.* in Aspleniariæ). 2. O. Vachellii, *Hook.* 3. O. Cinnamomea, *Linn.* 4. O. regalis, *Linn.* 5. O. Claytoniana, *Linn.* 6. O. spectabilis, *Willd.*

Illust. Hook. gen. fil. t. 46. A. *Schk. crypt. t.* 144.

Obs. It will be observed, by the synonomy of *Osmunda Javanica,* that more than one author has been led into a mistake with this species. Presl elevates it into a new genus, which he ranks amongst the *Aspleniariæ.* I have, at page 420 of vol. 3, and also at page 179 of vol. 4, of this Journal, already given my authorities for placing this plant in the genus *Osmunda.*

138. TODEA, *Willd.*

(Osmundæ *sp. Sw. R. Br.*)

Veins forked. *Venules* direct, free, sporangiferous. *Sporangia* definite, constituting oblong, simple or forked, naked, confluent *sori.*

Fronds *bipinnatifid.* Pinnæ *coriaceous, serrated, or membranous, pellucid and multifid.*

Species. 1. T. Africana, *Willd.* 2. T. rivularis, *Sieb.* (T. Australasica, *A. Cunn.*) 3. T. Fraseri, *Hook. et Grev.* 4. T. pellucida, *Carm. Hook.* (T. hymenophylloides, *A. Rich.*)

Illust. Hook. et Grev. ic. fil. t. 101. *Hook. gen. fil. t.* 46. B. *Kunz. Analect. t.* 4.

Obs. Todea is distinct from *Osmunda,* merely by its fronds being not at all, or only slightly, contracted, the sporangia produced on evident venules.

DIV. V. MARATTIACEÆ. *Kaulf*

Sporangia sessile, rarely pedicellate, horny, opaque, distinct and unilocular, or laterally and oppositely connate, forming a multilocular, round, oblong or linear, biserial or bivalved, compound *sporangium;* opening by pores or vertical slits on the interior side.

Obs. This remarkable division of Ferns contains a few more species than *Osmundaceæ*, from which it is distinguishable by its usually connate multilocular sporangia, while in *Angiopteris* the sporangia are free and unilocular. Nevertheless, habit and other affinities of structure tend to prove that this is the proper station for that genus.

139. ANGIOPTERIS, *Hoffm.*

(Clementea, *Cav.*)

Veins simple or forked. *Venules* direct, free. *Sporangiferous receptacle* medial, linear, fimbriate. *Sporangia* obovate, emarginate, sessile, opening by a vertical slit on their interior side, (10-12), definitely disposed in two opposite rows.

Fronds 6 *to* 10 *feet in length, stipitate, bipinnate.* Pinnæ *linear-lanceolate, serrate at the apex.* Sporangia *laterally confluent, forming a continuous transverse, submarginal, broad, compound* sorus.

Species. A. evecta. *Hoffm.* (Clementea palmiformis. *Cav.*)

Illust. Hook. et Bauer, gen. fil. t. 10. *Hook. et Grev. ic. fil. t.* 36.

Obs. Authors have described more than one species belonging to this genus; but from my observation I believe that the specimens, from various localities, are only slight variations of one species.

10. MARATTIA, *Sm.*

(Myriotheca, *Bory.*)

Veins forked. *Venules* direct, free. *Sporangiferous receptacle* subterminal, oblong, fimbriate. *Sporangia* oblong, sessile, longitudinally bivalved, multilocular, each cell opening by a vertical slit on their interior side.

Rhizoma *large, globose.* Fronds 4 *to* 8 *feet long, bi-tripinnate.* Pinnæ *lanceolate, serrated.* Rachis *sometimes winged.*

Examp. 1. M. alata, *Sm.* 2. M. fraxinea, *Sm.* 3. M. sorbifolia, *Sw.* 4. M. attenuata, *Labill.* 5. M. cicutæfolia, *Kaulf.* 6. M. elegans, *Endlich.*

Illust. Hook. et Bauer, gen. fil. t. 26. *Labill. Nov. Caled. t.* 13, 14. *Schk. crypt. t.* 152. *Schott, gen. fil.* 24.

Obs. This genus is discriminated from the preceding by its multilocular sporangium, the structure of which may readily be presumed as consisting of the two series or rows of sporangia in *Angiopteris* becoming connate, both laterally and oppositely, each of the cells of the sporangium of *Marattia* being analogous to a sporangium of *Angiopteris.* Consequently, the two valves correspond to the double series of the free sporangia of the latter genus. By some authors the sporangia of *Marattia* are termed *sori,* and the two valves *indusia,* but according to my view, neither of these appellations is appropriate in the present case.

141. EUPODIUM, *J. Sm.*

(Marattiæ *sp. Kaulf. Radd.*

Veins simple or forked. *Venules* direct, free. *Sporangiferous receptacle* medial, pedicellate! *Sporangia* oblong, longitudinally bivalved, multilocular, each cell opening by a vertical slit on their interior side.

Fronds *tripinnate,* 4 *to* 6 *feet in length; ultimate pinnules* 1 *inch in length, sessile, articulated with the rachis, laciniate or dentate.* Rachis *winged, membranous.* Sporangia *usually* 8-*celled, seated on a slender pedicel which becomes decumbent.*

Species. M. Kaulfussii, *J. Sm.* (Marattia alata, *Kaulf. Radd. non Sm.*)

Illust. Hook. gen. fil. t. 118. *Radd. Bras. Fl. t.* 83, 84.

Obs. I have been induced to designate this as a genus distinct from *Marattia*, in order to mark the peculiarity of its pedicellate multilocular sporangium, which has already been noticed at page 190 of the preceding volume, where its analogy to *Sphæropteris* is shown. The name *Eupodium* I have adopted from a manuscript of Mr. Brown's, originally intended for *Sphæropteris*.

142. DANÆA, *Sm.*

Veins forked. *Venules* direct, parallel, their apices arcuate and anastomosing at the margin. *Sporangiferous receptacle* occupying the whole length of the venules. *Sporangia* linear, biserial, multilocular, each cell opening by a circular pore.

Fronds *pinnate, rarely simple,* 1 *to* 3 *feet in length.* Pinnæ *lanceolate, entire or serrate.* Fertile fronds *usually somewhat contracted, densely and compactly sporangiferous over their whole under surface.*

Examp. 1. D. simplicifolia, *Rudge.* 2. D. nodosa, *Sm.* 3. D. alata, *Sm.* 4. D. elliptica, *Sm.* 5. D. intermedia, *J. Sm.*

Illust. Hook. et Bauer, gen. fil. t. 7. *Hook. et Grev. ic. fil. t.* 18, 51, 52.

Obs. The compact parallel linear sporangia, opening by two rows of pores, readily distinguish this genus from the two preceding, and, as in them, I consider the multilocular sporangia of this genus to be formed by two series of united sporangia, not separating lengthwise into two parts or valves, which is the case in *Marattia.*

143. KAULFUSSIA, *Blume.*

Veins costæform, parallel. *Venules* compound, anastomosing with free veinlets terminating within the areoles. *Sporangiferous receptacle* compact, round. *Sporangia* rotate, multilocular; cells opening by an oblong slit on their interior side.

Fronds *ternate, broad, stipitate*; segments *oblong-elliptical,* *sometimes bipartite, under-side pale-coloured, full of concave dots* (stomata.)

Species. 1. K. æsculifolia, *Blume.* 2. K. Assamica, *Griff.*

Illust. Hook. gen. fil. t. 59. A. *Hook. et Grev. ic. fil. t.* 229. *Hook. Journ. of Bot.* 2, *t.* 11, 12.

Obs. Few instances have been detected of this remarkable genus. The original species was found by Blume in Java, and recently by Cuming in the Island of Leyte, where only one plant was noticed; a second species has lately been discovered in Assam by Mr. Griffith.

Kaulfussia, in habit, venation and the position of its sporangia, presents much similarity to *Drynaria plantaginea, Aspidium trifoliatum and Hypoderris Brownii;* while the structure of its sporangia denotes its place to be in this division, and like *Marattia* and *Danæa,* the multilocular or compound sporangium may be viewed as formed by the union of from ten to twelve oblong sporangia, sessile round a punctiform receptacle, which being concrete, forms one mass, constituting a multilocular or compound, rotate sporangium, each cell opening interiorly as in *Angiopteris.*

Notes of a BOTANICAL TOUR *in the* WESTERN AZORES.

By HEWETT C. WATSON, ESQ. (*Continued from page* 125 *of the present volume.*)

AN ASCENT OF THE PEAK OF PICO.

The island of Pico was not surveyed during the summer of 1842; but while the Styx lay at anchor in the Bay of Horta, in the neighbouring island of Fayal, I had two opportunities of joining parties made from that vessel for the ascent of the Peak; which is by much the loftiest of the hills in the Azores, and consequently affords good illustrations of the influence of elevation in modifying their vegetation.

On the first occasion, which was on the 30th of May, two of the Lieutenants, the Assistant Surgeon, and myself, formed the party; but having started from the vessel on a dull and unfavourable morning, we had scarce accomplished one-third of the ascent, before the increasing violence of the wind, the driving rain, and the dense mists in which we were enveloped, became obstacles sufficient to baffle our efforts. We persevered so long as to spend a highly uncomfortable afternoon and night in a low cave which afforded some partial shelter from the rain and wind; but were compelled the next morning to give up our struggle against the continued bad weather, and to return to the ship.

A second and successful attempt was made on the 1st of July. The party from the Styx consisted of Captain Vidal, with Lieutenant Cleaveland and myself, who intended to ascend the mountain, and Assistant Surgeon Speer, who remained on the shore to register the barometer for comparison with a second instrument which was to be carried to the summit.

The Peak being perfectly clear from clouds on the 30th of June, we crossed to the island of Pico in the afternoon of that day, with the design of commencing our ascent early the following morning. We borrowed for the night a handsome house built on the shore of Pico, by Mr. Dabney, of Fayal, Consul for the United States, in which he and his family are accustomed to spend a part of each summer. At this time, however, the house was unfurnished; and not having brought any beds with us, we found the experiment of trying to sleep on the floor, or on the wooden frames of sofas destitute of their cushions, to be a very bad overnight preparation for the laborious march of the following day.

As daylight spread over the shores of Pico, on the morning of the 1st of July, we had the uncheering prospect of a dense canopy of clouds extending across the island and completely shrouding the Peak from our view. Apprehensive that he could obtain no good observations with the theodolite, Captain Vidal appeared greatly disposed to return to the ship, without attempting an ascent; and if any other voice in the party had expressed a similar inclination, this other attempt would probably have been abandoned. But our half dozen natives who had been engaged as guides and porters, were all in favour of making a trial, in expectation of the day clearing up shortly; especially since it signified little to them whether we reached the summit of the mountain or not, so that their time and services were paid for. Some feeling that a partial ascent only would still be productive of botanical interest and acquisitions, probably influenced my own opinion and wishes to chime in harmony with those of the guides; but I also entertained tolerably firm conviction that the upper part of the Peak would be found clear, having frequently observed, during the preceding month, that the stratum of clouds seldom covered more than a third of the mountain in its perpendicular height, and that the summit was left bright while the clouds hovered low down on the flanks. After some time spent in hesitation we at length started, about five o'clock, taking with us the various necessary instruments, a store of provisions, thick coats to wear in the night, and also two beasts of great rarity in Pico, namely, a pony and an ass, which had been considerately procured for us by Mr. Dabney, and which we bestrode in turn while ascending the lower part of the hill. The extreme trepidation exhibited by the women and children, whom we met in the road, while mounted on these animals, showed unequivocally how little they were familiar with the appearance of such creatures.

The first part of our route carried us for a short distance along a bare and rocky shore. In the vicinity of Mr. Dabney's house I observed a few plants of *Hyoscyamus Canariensis,* being the only spot in which it was found during my walks about the islands. Shortly bending our course inland and upwards, we travelled for some miles along a rough road, partly paved, but mostly floored by the natural and very uneven surface of the rock, ground into deep ruts by the wheels of the small bullock waggons which are the only conveyances in the island, and whose wheels of solid wood, studded with bosses of iron round the rim, grind channels in the lava not unlike the deep ruts seen in clayey lanes in England.

The road was flanked on both sides, by an interminable net-work of *vineyards;* almost the whole surface of the country being here divided by low stone walls into small compartments, varying considerably in size, but often about three yards wide by ten or fifteen yards in length. Within these compartments the vines are planted in crevices of the rock or between loose blocks, which are scantily clothed with weedy herbage. Among the weeds, *Briza maxima*, *Polycarpon tetraphyllum*, *Galactites tomentosa*, *Gnaphalium luteo-album*, *Gastridium lendigerum* and *Bromus Madritensis* were frequent species. The monotonous continuity of the vineyards was partly broken and relieved, immediately adjacent to the road, by the small gardens attached to many of the cottages.

Besides the *vines* there were some *apricot* trees, with fruit nearly ripe and very small, also numerous *fig* trees and *peach* trees, thickly covered with young fruit, but very few *oranges* or *lemons.* On the opposite coast of Fayal, which faces south-east, and has a good depth of mould produced by the decomposed lava-rocks and cinders, the *orange* and *lemon* trees are numerous, while comparatively few *vines* are cultivated, except to form shady walks in the gardens, when trained over trellis work. It is worthy of note, however, that the fruits of this part of Pico (although it is that declivity of the lofty peak, which faces nearly north,) are ripe earlier than those of Horta, which is built, as before stated, on the south east base of a range of fertile hills, and not ten miles distant. Probably the dark lava-rocks and walls of Pico, sparingly covered with vegetation, and thus often heated strongly by the rays of the sun, may be the chief cause of this peculiar result. *Erodium malachoides* and *Heliotropium Europæum* were gathered in small quantity by the road side, in the lower part of the region of vines; and this was the only spot in the Azores where I found these plants.

On attaining some elevation, that is, about a thousand feet above the sea by rude estimate, the *orange* had disappeared; *fig* trees had become more numerous than below; and the *vines* were giving place to *apple* trees, of stunted size, and producing small fruit of little flavour, as I afterwards ascertained, for at this time the fruit was not full grown. *Vineyards* were thus changing into *orchards*, not by any abrupt transition from one to the other, but by the substitution of the *apple*, for the *orange*, *vine*, *fig* and *peach* in succession; while the appearance also of patches of *cocos* or "*yams*" (*Caladium*) and *potatoes*, which were scarcely seen lower down, indicated a transition from orchards to field crops. At first we saw occasional patches of these vegetables, interspersed with the fruit trees. Higher up, indigenous shrubs took the place of planted fruit trees; single bushes or clumps of *Laurus* (*Canariensis* or *Barbasana ?*) *Myrica Faya*, *Myrsine retusa*, *Erica scoparia* and *Juniperus (communis ?)* being left to grow on stony or rocky spots that were unsuitable for the cultivation of the tuber-bearing vegetables just named.

As we passed across the orchard and potato grounds, *Solanum Pseudo-capsicum* was observed rather frequently by the road side, and *Smilax divaricata* (Solander MSS. in Herb. Banks.) was gathered in one locality among the apple trees, but no doubt quite wild there. *Tillæa muscosa* and *Trifolium suffocatum* were collected in the road, and *Asplenium palmatum* very sparingly on the walls by which it was enclosed. A few tufts of *Calluna vulgaris* were seen about the altitude at which *Solanum Pseudo-capsicum* ceased, and a single plant of *Aquilegia vulgaris*, with a white flower, being the only specimen which I found in the islands.

Somewhat higher, the patches of cultivated ground visibly decreased, and the clumps of native shrubs became larger and closer, finally coalescing into a belt of natural wood, consisting of the *Laurus*, *Myrica*, *Myrsine*, *Erica* and *Juniperus* above mentioned. The road now was becoming more damp and less stony or rocky, and narrowed in places to a mere cattle track between rising banks, which were thickly carpetted with *Tormentilla officinalis, Fragaria vesca, Prunella vulgaris,* and other small plants of northern Europe. Ferns became plentiful here, including *Pteris arguta, Allantodea umbrosa, Balantium Culcita, Aspidium fœnesecii* and some others. *Luzula elegans* (of Guthnick, not of Lowe) was frequent; and the pink or pale purple colour of its flowers rendered it much more ornamental, than any of our own native species. On shaded banks, where the road became a sort of gulley, I gathered *Bellis Azorica* (Guthnick's collection), *Lysimachia Azorica* (Hornemann), *Erythræa diffusa* (Woods), and *Lycopodium suberectum (*Lowe). The long flowered form of *Vaccinium Maderense* (which is *V. cylindraceum* of Smith) was pretty frequent on the banks by the road side, and highly ornamental. A few plants of *Daphne Laureola* were also observed, and *Hypericum foliosum* (Aiton, which is *H. grandifolium,* Chois.) was rather plentiful, though not yet in flower.

As we continued to ascend, the narrow belt of natural wood, which was formed by the evergreen shrubs interspersed with ferns again became broken into clumps; the intermediate spaces being now covered by a grassy sward, with many small pools of stagnant water, which gave an abode to *Scirpus fluitans, Scirpus Savii, Carex stellulata, Callitriche verna, Peplis Portula* and *Potamogeton natans.* Though very small and shallow, these pools are kept supplied with water by the mists and clouds from which this part of the mountain is seldom quite clear. Among the short grass here, I noticed *Bellis Azorica, Erythræa diffusa, Carex Azorica,* and *Carex sagittifera,* all plentiful. *Fragaria vesca* and *Tormentilla officinalis* (passing into *T. reptans*) were extremely abundant, as, indeed, they are almost every where in the islands above the height of a thousand feet, though scarcely seen in the low grounds near the coasts, except under the shade of rocks.

On getting more completely within the region of clouds and moisture, all the shrubs ceased except *Erica scoparia,* which still grew in scattered patches, and attained a height of six or eight feet, giving shelter to *Hymenophyllum Tunbrigense* and *Acrostichum squamosum*. *Aspidium fœnesecii* was still plentiful, but most of the other ferns seen lower down were now lost. This clouded region corresponds with the higher part of the hills and Caldeira in Fayal, being at once the region of alpine and of marsh plants; and the lower zone of it being also the most productive of *Ferns*. But the better and more comprehensive designation is that of the *Region of Clouds*; since the absence of cultivation, the green pasturage, and the prevalence of small marsh and boreal plants, interspersed with some of the peculiar alpine productions of the Azores, are all apparently attributable to the clouded condition of the atmosphere.

At length the *Erica scoparia*, that most frequent shrub of the Azores, itself yielded before the cloudy atmosphere, and we crossed a space of the hill quite destitute of shrubs, but covered with a close short herbage, consisting chiefly of *grasses*, *Carices* and *Tormentilla reptans*. Here Captain Vidal remarked that we had already ascended above the limit of the heath. Though I could not dispute the apparent fact, yet I felt convinced we were not truly above the natural limit of heaths, since the fronds of *Pteris aquilina* were conspicuous around us, rising above the very short pasturage. *Calluna vulgaris* had been observed lower down the Peak; and as that heath ascends in Scotland far above the *Pteris aquilina*, I read the appearance of the latter as a fair indication that we were still within the natural limit of heaths, so far as determined by absolute elevation; but the mist was here too dense to allow the sight of any thing beyond a distance of fifty yards. Accordingly in no long time, as we gained increased elevation, and a less clouded atmosphere, (probably between four and five thousand feet of altitude), scattered and very dwarf bushes of *Erica scoparia* again greeted our eyes, interspersed with a few examples of *Daphne Laureola* and tufts of *Aspidium fœnesecii*, together with occasional specimens of *Lycopodium Selago*, whose close and upright branches give it a totally different appearance from the curved and straggling habit of *L. suberectum* seen lower down the hill.

Higher still, as we ascended above the clouds, and attained an elevation that gave us a full view of the upper part of the Peak, now seen rising into a clear blue sky as anticipated, several other shrubs re-appeared which had been also seen below the region of the clouds; and we soon found ourselves crossing a much drier and more stony portion of the mountain, which was thickly covered with the species of *Erica, Juniperus, Myrsine* and *Vaccinium,* before mentioned. Apparently, this upper zone of wood had been the growth of a long series of years, although the shrubs were much smaller in their dimensions than those of the same species in the lower wooded zone, just below the region of clouds. *Calluna vulgaris,* and *Menziesia polifolia* (the dwarf variety figured in Loddiges' Botanical Cabinet) were interspersed in a few places between the larger shrubs, over spaces from which the latter had probably been burnt or cut and carried away.

Here we saw a number of women and children, employed in burning this natural cover of shrubs; but I omitted to ask whether their work was done in the expectation of producing pasturage for sheep, or whether there was some other object in view. If the former, I should deem it likely to prove labour thrown away, so bare and stony was the steep acclivity here, and so nearly destitute of water at this season. Whatever might be the object, there must have been much time spent in walking to and from the scene of their labour, the uppermost houses being quite within the limit of the cultivated region, distant by a walk of two or three hours.

It was now about noon, and we halted half an hour in this upper natural zone of shrubs, for the guides to eat their dinner, and for ourselves to make a lunch before commencing our ascent of the remaining and very steep portion of the Peak. Our resting-place was fixed by a small hollow in the rock, which held a gallon or two of water, and which slowly refilled itself as we abstracted the water from it, yet never overflowing. Here we found it advisable to leave our basket of provisions and sleeping coats, with other heavy articles, not indispensable to the objects of our ascent. Among these, I included my collecting-box, which had become rather weighty, and the contents of which were more likely to be injured by the burning rays of a cloudless sun, than to be increased from the dry and barren rocks still above us.

On again getting into motion, we slowly toiled up the shoulders of the mountain, and soon left below us all shrubs except *Calluna vulgaris*, which, with *Thymus cæspititius*, composed the principal part of the vegetation. Considerable spaces of bare rock, or of loose cinder-like stones, intervened among the portions of surface covered by the prostrate *Calluna*; and as these bare spaces gradually increased in extent and frequency, with the increasing altitude, almost the whole surface at length appeared to be destitute of vegetation. Only two species of flowering plants were observed within or below that region; the one being *Polygala vulgaris*, of which only a single root was seen on the Peak, and none elsewhere in the islands which I visited; the other was a species of *Agrostis*, possibly a form of *A. vulgaris*, afterwards picked just by the summit of the Peak, and nearly parched with drought.

The task of ascending this uppermost portion of the Peak was exceedingly toilsome. In many places the surface was covered by loose pieces of lava, which, when set in motion over each other by our feet, slipped rapidly down the steep declivity, endangering the freedom of our ancles and the integrity of our bones. The dark and bare rocks also were sensibly hot to the hands and feet, even felt through our shoes, under the influence of the mid-day sun, shining in full splendour through a dry and rarified atmosphere. Not a drop of water was found above the place at which we had rested to lunch; and all the portable stores that we had carried higher, consisted of a bottle of cyder and a very small flask of whisky, for we had expected to find water, if not snow, near the summit. We had soon cause enough to repent this bad management; thirst becoming painfully excessive, under the united influence of heat and great muscular exertion, more especially to the three Englishmen. The natives bore this better than we did, but one of the four guides or porters, who were still ascending with us (two having been left in charge of our baggage at the resting-place), was at length fairly knocked up, and he returned without reaching the summit.

The top of the Peak is a large hollow crater, out of which arises a smaller cone, of two or three hundred feet in altitude, produced by some eruption more recent than that which formed the chief crater itself; and the upper part of this little cone constitutes the pointed summit of the Peak, as seen from the ocean. Before reaching this crater, we lost the *Calluna vulgaris* entirely, but a few tufts of *Thymus cæspititius* were still visible, and continued to be seen even to the summit of the little cone. The crater is now imperfect, the sides having fallen down; but a considerable portion of the walls, too steep for the foot of man, still surround it with black and bare precipices. We crossed the crater, from which all snow and water had vanished, and gained the base of the small cone; and up this cone, nearly as steep as a sugar-loaf, we at last scrambled. I cannot say we walked up it, for hands were almost as serviceable as feet in effecting the ascent.

The summit of the small cone, or extreme summit of the Peak, is again the edge of a crater, there being a basin-like depression within it. Inside this basin, or little crater, the ground was hot and steaming, and at the depth of a few inches below the surface of loose stones, it was too hot to allow of the hand being pressed against it. We remained on the cone two or three hours, and while exposed to the wind, by standing on the edge of the basin, we speedily became so chilled as to tremble with cold, though Fahrenheit's thermometer indicated a temperature of 53°, the only instance in which I saw the thermometer so low during my stay about the islands. On descending into the small crater deep enough to be screened from the wind which swept over its summit edge, the climate was changed into a pleasant hothouse warmth, by the heat of the ground and the steam which rose from it. Here I felt quite comfortably warm while sitting on the rock without a coat, my own having been transferred as an outside coat to Captain Vidal, whose observations with the theodolite obliged him to stand on the exposed summit. He had made the ascent in a thin and light jacket, which had been exchanged for a coat of woollen cloth, before taking his exposed position; but after the heat and exertion of the ascent, the breeze of the summit would have made a thick cloak welcome, although the sun shone clear and the ground was warm.

On arriving at the summit, we had divided and drunk the bottle of cyder, and found it little enough for six parched tongues, and for lips painful from excessive thirst. But after remaining so long about the summit, the small flask of whisky had become at least equally valuable as another bottle of cyder might have been deemed, could it have been offered to us. The painful thirst, and intense longing for cool or bland drinks, such as cyder or milk, again returned in full intensity as we descended towards the spot at which we had rested for lunch, and near to which our sleeping ground was to be chosen for the night. The dark and steep sides of the hill, where there was so much bare rock, caught the rays of the declining sun, like a wall, as we descended the north-western declivity, and thus kept up the heat till sun-set.

While descending from the summit I felt too much wearied and worn out for botanical observations: indeed, I had scarcely an eye for any thing except spots which appeared in the distance likely to produce water, and for which I was vainly looking around at every downward step. Small channels were occasionally crossed, through which water had been flowing earlier in the season, but now all was dry and parched. Six weeks before, M. Dabney had sent a party of men to the summit, to obtain snow for a sick friend, and they had then procured some; but all trace of snow was now gone, and we had ample proof of the inaccuracy of those geographical works, which describe the Peak of Pico to be covered with perpetual snow. Snow lies till the month of May under some of the steep rocks that form the large crater, but on this first day of July snow and snow-water were no longer to be seen. The summit of the Peak is 7616 feet above the level of the sea, as afterwards calculated by Captain Vidal from the barometrical observations. The difference of temperature between the base and summit was about 22° of Fahrenheit.

Thymus cæspititius and the *Agrostis* before mentioned were the only phænogamous plants seen on the little cone; and a very few *mosses* and *lichens* were associated with them. I should think the highest tufts of *Calluna vulgaris* were met with at an altitude of about 7000 feet. *Erica scoparia* was the second shrub observed in the descent, and might attain a height of 6000 feet. I should guess the spot at which we halted for the night to have been about 5000 or 5,500 feet in elevation. Here we were in the upper zone of shrubs, including *Vaccinium Maderense*, *Myrsine retusa*, *Menziesia polifolia*, and (if I remember rightly) also the *Juniperus* (*communis?*) and *Daphne Laureola*, along with *Erica scoparia* and *Calluna vulgaris*. Below this place, the *Calluna* was very sparing in quantity. We formed our beds with green bundles of the *Erica*; and having made a good fire with the dead and dry branches of the shrubs, we passed the night more comfortably than the preceding night on the deal boards in Mr. Dabney's house. Pilot-coats and a good fire were by no means unnecessary while we slept under a clear sky after the day's labour. About sunrise we were scarcely two hundred feet above a dense mist, but during the whole night the heavy masses of mist or cloud, which enveloped the middle portion of the mountain, remained constantly below us. The sun rising on the contrary side of the Peak to that on which we had slept, threw the conical shadow of the hill, deep and distinct, over the volumes of white cloud beneath us, and thus told us that it had risen, long before we could see the luminary itself. We made a rapid descent through the mist, and found the bushes and grass dripping wet until we got below it, when we came into a fair and sunny morning on the lower part of the mountain, and arrived at the house of Mr. Dabney before nine o'clock. The whole ascent and return had thus occupied us for about twenty-eight hours, or excluding the night, and the time spent in the observations with the theodolite, a space of fifteen or sixteen hours. The entire ascent and return might therefore be made in one day; indeed, it was accomplished in a day by two English gentlemen, who ascended on the last day of June.

I regret not being enabled to state the exact heights at which the various species of plants mentioned, commence and cease. I was of course much tied by accompanying a party who ascended for a different object. Captain Vidal wished only to ascertain the absolute height of the Peak, and the relative position of other islands, or other parts of the same island, as seen from the Peak. On this account, I was unable to avail myself of an opportunity, which might, under other circumstances, have been afforded, for ascertaining also the altitudes at which the shrubs and other plants grow, whether indigenous or cultivated. The highest cultivation, that of the potatoe and cocoa, probably did not exceed 2000 feet. Neither, of course, did a rapid ascent and return allow much time for looking about after plants beyond the line of march, without risk of losing the party. It is highly probable that the lower wooded zone would repay a more careful scrutiny, and prove more interesting to a botanical collector than the ascent to the actual summit of the Peak.

On one other occasion I crossed to Pico again for a few hours, and landed at a different part of the coast, to ascend one of the small hills, or volcanic cones, formed by some eruptive burst of cinders and lava near the base of the great mountain. I got thoroughly soaked from head to foot by the heavy rain, which commenced almost as soon as I landed, and almost prevented my botanizing. On this occasion I collected *Corema alba* and *Bartsia Trixago,* both on the cone ascended, and neither of which did I find elsewhere in any of the islands visited; also *Triticum ciliatum* and *Myosotis maritima,* found elsewhere by Guthnick, but only on this part of the coast of Pico by myself. *Rhus Coriaria* was likewise gathered on the volcanic cone, and apparently indigenous there, though other localities in which it was observed, in the islands of Fayal and Flores, were all near houses or gardens, and to which I deemed it to have been introduced by the hand of man.

It may be here observed, that the names which are applied to some of the plants mentioned in these notes, may be disputed by other botanists. The shrub which I have called *Vaccinium Maderense,* is certainly the *V. cylindraceum* of Smith; but I cannot regard it as being specifically distinct from *V. Maderense,* of which, however, it is a very handsome variety, with flowers more numerous, and often twice the size of those in the Madeira specimens. Those botanists who delight in multiplying species on paper, by describing extreme forms, in disregard of intermediate and connecting links, will doubtless keep *V. Maderense* and *V. cylindraceum* distinct. The *Daphne Laureola* of these notes is the same as the plant marked "*Daphne, n. sp.*" on the labels of Mr. Guthnick, and I supposed it a different species when collected; the more spreading branches and shorter leaves inducing a dissimilarity of aspect from the upright shrubs of our hedgerows and coppices; but as I detect no essential distinctions in the dried specimens, the different mode of growth may perhaps be ascribed to the influence of elevation and exposure to violent winds. The *Lysimachia Azorica* (of Hornemann) is possibly a variety of *L. nemorum,* which it closely resembles. The specific character assigned to it in the Botanical Magazine was drawn from plants cultivated in a pot, and is inapplicable to the wild specimens, the stems of which are not erect, and are larger, stronger, and more branched than those of our indigenous *L. nemorum.* Perhaps the best distinction lies in the broader sepals of *L. Azorica,* which are incorrectly figured in the Botanical Magazine. The *Juniperus* may be only one of the many varieties of *J. communis*. It differs from the form of that species which is indigenous in Britain, by having an almost arborescent growth, the stems attaining three or four feet in circumference, broader leaves not at all subulate: in the latter respect, it approximates to *J. nana* of our mountains. The name of *Bellis Azorica* is taken from Mr. Guthnick's labels; but while the plant closely resembles our *B. perennis*, in its leaves and general habit, the receptacle is almost flat, and is covered by short broad scales; so that the generic character is not that of a *Bellis*. The *Erythræa diffusa* is a proteiform species, but the specimens collected on Pico are readily distinguished from those of our native species, by their prostrate stems, elongated peduncles and perennial root. The plant is common on the hills in all the islands visited, and invariably white-flowered, though the French specimens, on which the species was founded, produce pink flowers. A tendency to the production of white-flowered species and varieties seems a characteristic of the botany of the Azores. The name of *Myosotis maritima* is also taken from the labels of Mr. Guthnick. It is an undescribed species in this country, apparently annual, and nearest our *M. arvensis*, but with much larger and paler flowers than the latter. The *Luzula* of the Azores approaches our *L. maxima* in size and habit, while that of Madeira, described by Lowe under the name of *L. elegans*, more resembles the British *L. pilosa*. Both species differ conspicuously from our indigenous species in the colour of their flowers, which are pale purple. I suppose that Lowe has the priority in the name of his Madeira species. If so, that of the Azores might be named *L. Azorica*.

Gramina Novæ Hollandiæ, *præsertim* Insulæ Van Diemen, *collectionis Lindleyanæ, a v. cl. Drummond, Gunn, aliisque collecta. Scripsit* C. G. Nees ab Esenbeck.

Tetrarrhena *tenacissima* N. ab E.: floribus glabris, valvulis nervosis obtusis, extima duplo breviore, foliis planis patentibus culmoque ramoso diffuso scaberrimis.

Van Diemen's Land, d. 30. Dec. 1837. *Gunn. n.* 987. ♃.

Similis *Tetrarrhenæ distichophyllæ*, sed differt abunde foliis latioribus, nec pilosis sed cum vaginis culmoque setulis brevibus crassis, in culmo vaginisque reversis scaberrimis. Culmus est longus, ramosus, flagellaris, angulosus, inferne longo tractu nudus.

Tetrarrhena *Drummondiana* N. ab E.: floribus glabris, valvulis nervosis obtusis, extima paulo (¼) breviore, foliis planis subtus culmoque erecto ramoso rigidulo scaberrimis, vaginis basi lævibus.

Ad flumen Cygnorum. ♃. 1839, *Drummond.*

Differt a *Tetrarrhena distichophylla* et *tenacissima* valvula sterili inferiori maiori, vix ¼ breviori, tum culmo erecto, foliis culmo adpressis tripollicaribus 1½-2 lin. latis acuminatis quinquenervibus, margine subtusque scaberrimis, supra tenuissime holosericeo-mollibus, superioribus racemo longioribus. —Culmus in medio ramo uno alterove erecto, subinde simplicissimus, sesquipedalis, infra nodos scaberrimus. Vaginæ apicem versus scabriusculæ. Glumæ ovatæ, acutæ, flosculis duplo breviores, glabræ.

Microlæna *stipoides R. Br. Gunn n.* 997. Fl. Cygn. *Drummond.* Huius loci Mühlenbergia simplex *Kunth.* Podosæmi spec.? *N. ab E. in Sieb. Agrostoth. n.* 94.

Hierochloe *australis.* R. Br. Van Diemen's Land. *Gunn* 26. Dec. 1837. *n.* 337.

Helopus *annulatus* N. ab E. Milium punctatum *R. Br.* Nov. Holland. interior *Major Mitchell's Exped. n.* 58.

Panicum *lævinode. Lindl. pl. Mitchell. in Ann. des Sc. Nat.* 2*e. sér.* 1842. xv. *p.* 64. (Panicum decompositum *R. Br.*) *Major Mitch. Exped. n.* 70. Interior of New Holland.

Species difficilis, differt a *Panico colorato* gluma inferiore breviore rotundata, a *Panico arenario* Brot. foliis longioribus linearibus planis, gluma superiore flosculoque masculo minus valide nervosis, et, uti videtur, rhizomate haud repente.

Panicum *laniflorum* N. ab E.: racemo composito contracto, ramis intermediis longioribus flexuosis alternis glabris, pedicellis geminis inæqualibus, spiculis (linealibus) subovatis lana increscenti-fastigiata rufescente vestitis, gluma inferiore flosculis 4 plo-5 plove breviori lanceolata hermaphroditoque flosculo mucronato punctulato glabris, foliis linearibus margine undulatis supra subtilissime puberulis, ligula ovata obtusa convoluta, culmo simplici erecto, nodis glabris.

In Australia interiori. ♃. *Major Mitchell's Exped. n.* 68.

Quod ad habitum simile est *Panico serrato* Spr. sed diversi est ordinis, scil. Virgariarum *Trin.*

Radix fibrosa. Culmi cæspitosi, basi bulbosi, semipedales, flavi, graciles, nodis glabris infimisve puberulis. Folia 1-1½ poll. longa, vix lin. lata, acuta, in pagina superiori striata et vix conspicue puberula, subtus cum vaginis glabra. Ligula ovata, obtusa, obliqua, convoluta, basi herbacea. Racemus compositus, 1½-2 pollicaris, contractus, spiciformis, rhachibus triquetris, scabris, propriis flexuosis. Spiculæ lana molli rufo-ferruginea vestitæ, geminæ; pedicellis inæqualibus basi coniunctis, longiori spiculam subæquante. Gluma inferior parva, glabra; superior flosculique masculi valvula inferior acutæ, rufæ. Flosculus hermaphroditus oblongus, mucronato-acutus, subtilissime punctulatus, luteus.

Neurachne *Mitchelliana* N. ab E.: glumis tuberculatis acumine subulato, inferiore dorso barbata.

In Novæ Hollandiæ interioribus. ♃. *Major Mitchell's Exped. n.* 64.

Culmi plures e rhizomate squamato tomentoso erecti, dense cæspitosi, 4-8 poll. longi, plurinodes, nodis barbatis; inferioribus omnibus a vaginis obtectis. Vaginæ arctæ, striatæ, glabræ, circa os barbâ cinctæ; inferiores subinde pubescentes. Ligula indistincta. Folia 8-9 lin. longa, 1½ lin. lata, lanceolata, apice angustiora at obtusiuscula, basin versus setoso-ciliata setis bulbosis, striata, rigidula, glauca. Spica terminalis, pollicaris, densa, cylindrica. Rhachis angulata, hispida. Pedicelli brevissimi, crassi, solitarii, articulo pateriformi a spiculis soluti. Spiculæ 2¼ lin. longæ, viridulæ, obliquæ. Glumæ herbaceo-cartilagineæ, ovato-lanceolatæ, truncatæ, inferior extrorsum sita, paulo minor, dorso canaliculata barbaque media setosa tuberculis grossis agglomeratis imposita patente ornata, infra barbam depressior plaga media tenuiore membranacea, in basi et ad latera pilis brevibus conspersa, quinquenervis, nervis tribus mediis infra barbam obsoletis; gluma superior basi latior, dorso hirta, ad latera, excepto acumine dense setoso-ciliata, septemnervis, acumine angusto truncato apice denticulato. Flosculi chartacei, subconformes, glumis breviores; inferior univalvis neuter, superior hermaphroditus. Valvula flosculi neutrius oblonga, truncato-tricrenata, quinquenervis, dorso plana et scabra. Flosculi fertilis valvulæ glabræ, ovatæ, cuspidatæ, paulo tenuiores, cuspide inferioris tridenticulata; hæc tri- illa bi-nervis cuspide bidentata. Stamina tria; antheræ breves; lodiculæ lineares, truncatæ. Ovarium ovale, depressum, glabrum; styli discreti, capillares; stigmata pilosa.

Adn. *Neurachne phleoides* R. Br. definienda est;

N. (*phleoides*) glumis subulato-acuminatis imberbibus ciliatis.

Spinifex *hirsutus?* sterilis. V. D. L. *Gunn n.* 584.

Chrysopogon *parviflorus* (Holcus) R. Br. Australia interior. Var. *a*. N. 66. *Major Mitchell's Exped.*

Andropogon *sericeus* R. Br. *Major Mitchell's Exp. n.* 54.

Anthistiria *australis* R. Br. glumis involucrisque lævissimis glabris. Van Diemen's Land, *Gunn n.* 591. Swan River, *Drummond*, idem, gl. invol. hirsutulis.

Hemarthria *uncinata* R. Br. Van Diemen's Land. *Gunn n.* 417.

Alopecurus *australis* N. ab E.: culmo (adscendente?) incurvo, spica composita cylindrica, glumis obtusis subvillosis ciliatis, arista glumis duplo longiore exserto, antheris oblongis, foliis lineari-angustis.

In Novæ Hollandiæ interioribus legit *Mitchell* (*n.* 51.) ⊙

Similis *Alopecuro fulvo*, differt autem: staturâ graciliore, culmo haud ita geniculato et adscendente, sed potius incurvo paucinodi, foliis duplo angustioribus, aristâ longiore fortiore, ut Alopecuri geniculati, sed spiculæ iis Alopecuri fulvi haud maiores sunt.

Lachnagrostis *Billardieri*. Tr. Agrostis Billardieri R. Br. V. D. L. *Gunn n.* 1007. Valvula inferior apice biseta setis bifidis.

Lachnagrostis *Willdenowii*. *Major Mitchell's Exped.* Nov. Holl. inter. Var. angustifolia et humilis.

Adnot. *Agrostis æmula* Sieb. Agrostoth. n. 81. ad *Lasiagrostin Willdenowii*, neque ad *Agrostin æmulam* R. Br. pertinet, quæ *Lasiagrosti Billardieri* simillima est.

Lachnagrostis *æmula*. R. Br. Ins. Van Diemen. *George Everett, Esq.—Gunn n.* 1006.

Lachnagrosti Billardieri simillima, eiusdemque magnitudinis, sed flosculus hirsutus est. Rudimentum alterius flosculi in his ambabus longitudine est dimidii flosculi, in Lachnagrosti Willdenowii contra brevissimum.

Lachnagrostis *Willdenowii* Ins. Van. Diemen. *Gunn n.* 1008. Valvula inferior biseta setulis bipartitis brevibus.

Agrostis *æquata* N. ab E.: paniculæ semiverticillatæ patentis ramis scabris basi simplicibus, flosculi chartacei lævis mutici valvulis glumisque æqualibus his carina scabris, foliis planis vaginisque scaberrimis, ligula ovata obtusa truncatave, culmo adscendente basi repente.

Van Diemen's Land d. 18. Jan. 1838. *Gunn n.* 1005.

Proxima *Agrosti polymorphæ*, Var. III. et Trin. i. e. *Agrosti hispidæ*, Willd. seu *vulgari* With., differt autem flosculo paulo maiori rigidulo, valvula superiori inferiorem æquante neque ea dimidio breviore, et glumis minus acutis.

Agrostis *intricata,* N. ab E.: paniculæ ramis quinis-ternisve lævibus a medio vel paulo inferius florentibus paucifloris, glumis æqualibus scabriusculis, flosculo membranaceo glumis paulo breviori mutico, valvula inferiori emarginata, superiori duplo breviori, foliis angustissimis planis scabris, ligula ovata truncata, culmis adscendentibus basi repentibus ramosis intricatis.

Variat panicula contracta et patula.

Cum *Echinopogone Gunniano* sub *n.* 1011. in Insulæ van Diemen collibus Hampstead Hills dictis, Februario. *Gunn n.* 1011 ex parte. ⊙

Agrosti *polymorphæ* simillima, sed, uti puto, diversa notis adlatis. Vix spithamæa, debilis et gracilis.

An huius loci *Agrostis polymorpha* I. B. b. 2. *a.* e Nova Hollandia apud Trin. Gram. unifl. p. 199? et IV. B. l. c. p. 202?

Echinopogon *ovatus* Van. D. L. *Gunn* n. 590.

Echinopogon *Gunnianus* N. ab E.: floribus paniculatis.

In collibus Hampstead Hills, insulæ Van Diemen, Febr. 1837, *Gunn* n. 1011, cum *Agrosti intricata* contextus. ⊙

Quod ad characteres genericos sane *Echinopogoni ovato* coniunctissimus est, sed habitu alieno *Agrostis albæ.* Radix fibrosa. Culmi plures, digitales, palmares et longiores, binodes, inferne genuflexi, simplices. Vaginæ internodiis breviores, retrorsum scabræ. Ligula brevis, ad latus decurrens. Folia pollicaria, sesquipollicaria, nervo carinata. Panicula oblonga vel lanceolata, erecta, rigidula, pollicaris vel sesquipollicaris. Rami 3-5, inæquales, rigiduli, plerique apice trifidi aut subtrichotomi. Spiculæ viridulæ, 1 lin. circiter longæ. Glumæ æquales, obtusiusculæ, ovatæ, in sicco statu patulæ, trinerves, muricato-scabræ. Flosculus basi pilis cinctus, lanceolatus, duplo longior. Seta valvulæ inferioris plana, rigida. Stamina 3. Stigmata subsessilia. Rudimentum alterius flosculi filiforme, parce pilosum, flosculo duplo brevius.

Mühlenbergia *crinita* Tr. Van Diemen's Land, *G. Everett, Esq.*

Mühlenbergia *mollicoma* N. ab E.: monandra, panicula elongata subcylindrica, glumis setaceo-acuminatis hyalinis, flosculo glumis ⅓ breviori, valvula inferiori setaceo-acuminata integra, arista supra medium dorsum exoriente glumis quadruplo-quintuplo longiori gracili undato-flexuosa (purpurea), foliis planis vaginisque scabriusculis.

In Insula Van Diemen d. 8. et 11. Jan. 1838. *Gunn* n. 988. ♃.

Similis *Mühlenbergiæ crinitæ*, sed facilis cognitu aristis mollibus capillaribus undato-flexis patulisque nec recurvis. Habitus Penniseti fere vel Gymnothricis.

Mühlenbergia *rara*. Van Diemen's Land. 2. Jan. 1838. *Gunn* n. 989. (ex parte).

β. macrostachya. Spiculis maioribus, rudimento seti-formi brevissimo nudo ad basin flosculi. Van Diemen's Land. *G. Everett, Esq.*

Stipa *flavescens* R. Br. V. D. L. *Gunn* n. 996. Swan River, *Drummond*.

Stipa *semibarbata* R. Br. Swan River, *Drummond*. Glumæ maiores; arista fortior quam in Stipa molli. Vaginæ pubescentes ut illi.

Stipa *compressa* R. Br.? Swan River, *Drummond*.

α. maior.

β. minor.

Culmus vix pedalis strictus, hinc angulo acuto illinc sulculo notatus. Vaginæ compressæ. Panicula contracta, basi vaginata. Glumæ pallidæ, 6 lin. longæ. Arista quadripollicaris, in medio parum inflexa, hinc denuo recta.

Stipa *elegantissima* Labill. Swan River, *Drummond*.

Stipa *campylachne* N. ab E. in Gr. Preiss. *Drummond*, Swan River.

Gamelythrum N. ab E.

Gluma uniflora, bivalvis, subæqualis, valvis (s. glumis) basi attenuatis in tubum brevem connatis. Flosculus bivalvis, stipitatus, valvulis basi in tubum (sericeum) connatis membranaceo-marginatis convolutis: inferiori trifida superiori bifida, utriusque laciniis aristatis setaceis similibus adiecta utrinque lacinula brevi membranacea lanceolata a margine valvulæ membranaceo proficiscente. Lodiculæ angustæ, truncatæ. Stamina tria, basi connata. Styli duo, discreti; ovarium glabrum, lanceolatum. Spiculæ capitatæ.

Gramina cæspitosa, rhizomate repente squamoso. Culmi simplices, inferne vaginati aphylli, in medio densifolii, apice decrescenti-microphylli. Capitulum terminale (in speciebus cognatis turbinatum), spiculis exterioribus sterilibus involucrum formantibus. Spiculæ magnæ, brevi-pedunculatæ. Glumæ et flosculus fere ut in Amphipogone, sed basi angustata tubulosa in pedicellum abeuntia. Flosculus teres.

Gamelythrum *turbinatum* N. ab E. (Amphipogon, R. Br.) Swan River, *Drummond.*

Amphipogon *laguroides* R.Br. Swan River, *Drummond.*

Amphipogon *strictus* R. Br. Swan River, *Drummond.*

Enneapogon *nigricans. Major Mitchell's Expedit. n.* 52.

Pentapogon *Billardieri* R. Br. *Gunn n.* 989. ex parte.

Bromidium *lobatum* N. ab E. Agrostis lobata R. Br. Van Diemen's Land. Variat

α. spiculis paulo maioribus, 2 lin. longis. *George Everett, Esq.* a. 1838.

β. spiculis paulo minoribus (1¾ lin. longis) *Gunn.*

β 1. maius, panicula semipedali, valde lobata, foliis longioribus latioribus. *Gunn* d. 25. Dec. 1837. *n.* 990.

β 2. minus, panicula strictiori subcylindrica, foliis brevioribus sæpe convolutis strictis, spiculis subinde purpurascentibus. *Gunn n.* 991. d. 25. Dec. 1837.

A Bromidio 4-seto (Agr. quadriseta R. Br.) differt dentibus valvulæ brevioribus, *interioribus* paulo maioribus, arista fere basilari.

Bromidium *quadrisetum* (Agrostis quadriseta R. Br.) Van Diemen's Land. *G. Everett, Esq.*

Eriachne *mucronata* R. Br. *Drummond* ad fl. Cygn.

Eriachne *ovata* N. ab E.: panicula contracta brevi, spiculis glumisque ovatis; his 9-11-nervibus asperiusculis, valvulis subulato-attenuatis a basi ad medium hirsutis, superiori mucronata, inferiori bidentula, culmi nodis vaginis foliisque glabris.

Ad flumen Cygnorum *Mr. Toward.* ♃.

Differt ab *E. brevifolia* R. Br. spiculis brevioribus ovatis nec oblongis, et foliis longioribus. An loco "brevifolia" legendum "lævifolia"?

Danthonia *setacea* R. Br. Swan River, *Drummond.*

Danthonia *varia* N. ab E.: panicula coarctata lanceolata, spiculis 5-6-floris gluma scabriuscula brevioribus, flosculi valvula inferiori basi medioque barbata, serie villorum superiori in fasciculis 7 dispositorum valvulam a basi ad sinum æquante, aristis lateralibus valvula longioribus intermedia dimidio minoribus, foliis planis scabris, vaginis glabris ore barbatis.

Ad flumen Cygnorum, *Drummond.*

Danthonia *pilosa* R. Br. Var. racemo simplici.

Danthonia *Gunniana* N. ab E.: racemo subsimplici lanceolato, spiculis sexfloris gluma lævi brevioribus, flosculorum valvula inferiore basi medioque barbata serie villorum superiore rariore emarginaturam subattingente, setis lateralibus valvula longioribus arista dimidio brevioribus, foliis linearibus planis pilosis, radicalibus cæspitosis obtusis brevibus, vaginis glabris basi oreque barbatis.

In Insula Van Diemen d. 1. Jan. 1838. *Gunn n.* 994. ♃.

Differt a *Danthonia pilosa,* cui proxima, inprimis foliis planis nec setaceis, vaginis glabris, tum inflorescentia racemosa, e spiculis 6-8, raro infimo ramulo distachyo. Folia radicalia dense conferta, pollicaria, $\frac{1}{3}$ lin. lata, plana, obtusa, pilosa. Culmi $\frac{1}{2}$-1 pedem alti, glabri, trinodes, ad genicula infracti. Vaginæ internodiis breviores, ad os et basin pilis cinctæ. Folia culmea inferiora radicalibus conformia, supremum complicato-subulatum et brevius. Pedicelli breves.

Glumæ glabræ, virides, margine pallido. Flosculi 6, 1¼ lin. longi. Setæ laterales 2 lin. (ad sinum metiendo) longæ. Arista 6 lin. longa, basi fusca, citra genu albida. Fasciculi valvulæ inferioris superiores discreti 3-4, breves, e paucis pilis constantes sinum vix attingentibus, laterales a mediis valde distantes; inferiores fere confluentes in singulum medio interruptum. Reliqua valvulæ superficies lævis est, inferiori pilorum cingulo vix superiorem contingente.

Danthonia *cæspitosa* Gaud. var. *gracilis*, racemo subsimplici. Ad flumen Cygnorum. *Drummond.*

Phragmites *communis*, Van Diemen's Land. *Gunn n.* 814.

Agropyrum *velutinum* N. ab E.: spiculis distiche imbricatis 6-7-floris, glumis lineari-lanceolatis acutis septemnervibus spicula duplo brevioribus, flosculis brevi-aristatis, rhachi foliisque brevibus velutino-pubescentibus, radice repente.

In Chilton, Surrey Hills, Insulæ Van Diemen, Februario 1837. *Gunn n.* 770.

Proximum *Agropyro acuto*, sed diversum foliis extus molliter pubescentibus et spica densiori breviori (1-1½ poll. longa).

Culmus strictus, pedalis, apicem versus pubescens, superne late nudus. Folia 2-5 circa basin approximata, 2-2½ poll. longa, rigidula, incurva, ætate convoluta, supra pilis brevioribus rigidioribus, subtus pilis mollibus brevibus densius vestita; folium unum infra medium culmum illis simile, paulo brevius. Vaginæ scabræ. Ligula truncata. Spiculæ 6-8, imbricatæ, ovatæ, scabræ; infimæ paulo magis distantes. Flosculi duo terminales sæpe steriles. Arista ex apice angusto subtruncato, valvulæ subulatæ, strictæ, valvula 7-9-nervi triplo et ultra brevior, cum valvulæ apice purpurea.

Poa *porphyroclados*, N. ab E. in *Herb. Preiss.* Ad fl. Cygn. *Drummond.*

Poa *Sieberiana,* Kunth. *G. Everett,* Van Diemen's Land.

Poa *plebeia,* R. Br. Van Diemens Land.

Poa *lævis,* R. Br. *Gunn.* Insula Van Diemen. Synon. Arundo poæformis *Labill. I. p. 27, t.* 35 ad hanc speciem, neque ad Poa australem pertinet.

Poa *Drummondiana,* N. ab E.: panicula contracta ramis geminis scaberrimis a medio floriferis, spiculis ovatis quinquefloris scabris pedicello triplo quadruplo longioribus, valvula infera flosculorum distincte nervosa carina marginibusque basi subpubescentibus apice obtuse scariosa erosulo-denticulata, ligula brevi truncata, foliis convoluto-filiformibus elongatis retrorsum scaberrimis, radice repente nodosa.

Ad flumen Cygnorum, Novæ Hollandiæ. *Drummond.* ♃.

Accedit *Poæ nodosæ,* N. ab E. in *Gram. Preiss, n.* 1852, sed differt spiculis latioribus magis turgidis e viridi et purpurea variis, valvulis magis obtusatis basique in carina et margine vix puberulis, ligula breviore, rel. An eius forma?

Hæc species cum præcedente aptius Sclerochlois consociabuntur.

Poa *australis,* R. Br. Van Diemen's Land, *Gunn. n.* 596?

Poa *australis,* R. Br. *β.* spiculis viridibus paulo angustioribus plerisque trifloris, foliis subinde planiusculis. Van Diemen's Land. *Gunn n.* 1012.

? Poa *saxicola,* R. Br. *Prodr. p.* 180. *App. ed.* N. ab E. III. 1. *p.* 36, *n.* 5.

? *β effusa,* panicula patente et patentissima ramis capillaribus 3, 2, 1, compositis simplicibusve e medio apiceve florentibus.

Insula Van Diemen d. 13 Dec. a. 1837, ♃. *Gunn n.* 1009.

Culmi basi fasciculatim ramosissimi, adscendentes, filiformes, flaccidi, digitales-pedales. Folia perangusta, plana, siccando complicato-filiformia culmo breviora, scabra, viridia. Vaginæ compressæ, scabræ, ore nudo. Ligula rotundata, glabra. Nodi glabri. Spiculæ 1½-2 lin. longæ. Glumæ ovatæ, acutiusculæ, margine subtilissime pubescentes; superior maior. Flosculi distantes, virides; valvula inferior oblongo-lanceolata, obtusa, 5-nervis, carina et margine brevissime lanuginosa.

Occurrunt inter alia specimina minora panicula simplici contracta minore, quæ probabiliter *Poæ saxicolæ* verum exhibent typum.

Eragrostis *setifolia*, N ab E. : paniculæ oblongæ contractæ rigidulæ, ramis alternis per intervalla magis approximatis a basi compositis axillis nudis, spiculis brevissime pedicellatis lineari-ellipticis 3-20-floris purpurascenti-canis, flosculis triandris ovatis (a latere oblongo-lanceolatis) obtusis obsolete nervosis, valvula superiore subæquilonga integerrima margine lævi, foliis setaceo-convolutis vaginisque lævibus, ore vaginarum imberbi, ligula brevissima glabra.

In Novæ Hollandiæ interioribus ♃. *Major Mitchell's Exped. n.* 59.

A varietatibus *Agrostis Brownei,* quæ *E. Bahiensis. Schult. et Tr.* differt foliis brevioribus setaceis lævibus, vaginarum ore omnino nudo, reliquisque characteribus.

Eragrostis *interrupta,* R. Br. Var. contigua panic. spiciformi. *Major Mitch. Exped. n.* 61.

Eragrostis *parviflora,* R. Br. Var. panicula contracta. *Mitchell's Exped. n.* 53.

Briza *minor,* Linn.

Glyceria *fluitans,* Van Diemen's Land, *Gunn n.* 994.

Vulpia *Brauniana,* N. ab E. (Triticum scabrum, R. Br.) *G. Everett,* Van Diemen's Land. Aristæ in spicula fructifera incurvæ.

Vulpia *scabra,* Labill. Van Diemen's Land, *Gunn n.* 993. Aristæ subrecurvæ.

Vulpia *pectinata,* N. ab E. (Triticum pectinatum R. Br. Festuca pectinata Labill.) Van Diemen's Land, *Gunn n.* 999.

Vulpia *bromoides* Gm. Van Diemen's Land, *Gunn n.* 992, cum varr. nanis.—*G. Everett,* 1839.

Schedonorus *Billardierianus,* N. ab E. (Festuca littoralis Labill. nec R. Br.) Van Diemen's Land, *n.* 986, Sieb. Agrostoth, *n.* 58.

Amphibromus, N. ab E.

Spiculæ 2-3-floræ, flosculis superioribus pedicellatis, rhachilla insertionibusque barbatis. Glumæ duæ, herbaceæ, inæquales, flosculis breviores. Flosculi (an sexu distincti ?) bivalves, valvula inferiori chartaceo-rigida (♂) infra apicem membranaceum bifidum vel tridenticulatum aristata, arista stricta, siccando ad horizontem reflexa, nec geniculata; superiori teneriori paulo breviori, dorso plana, margine acute inflexa ciliataque, binervi, apice integra. Lodiculæ duæ lanceolatæ, membranaceæ. Stamina ? Ovarium compressum, glabrum; styli brevissimi, discreti; stigmata laxe plumosa. Caryopsis oblonga, compressa, libera, valvulæ superioris marginibus circumdata.

Panicula effusa ramis geminis gracilibus, paucifloris. Habitus potius *Avenæ* quam *Bromi*. A *Deschampsia* differt flosculis durioribus, arista fortiori herbacea, valvula superiori a tergo depressa, marginum plica laterali argutissima ciliata ut in Bromeis. Fructus autem est Deschampsiæ.

Culmus longus, fistulosus, mollis, siccando collabens, glaber. Nodi glabri. Folia superiora lineari-subulata, brevia, glabra. Ligula exserta, membranacea. Paniculæ rami racemoso-distachyi. Spiculæ demptis aristis 4-lin. longæ. Glumæ basi purpureæ, ovatæ, obtusæ; inferior 1½ superior 2 lin. longa, illa uninervis, hæc trinervis. Valvula inferior 3 lin. longa, basi utrinque fasciculo pilorum notata, dorso convexa, scabra, apicem versus 5-nervis, ipso apice brevi spatio membranaceo bifido vel dentato; seta infra apicem orta, rigida, scabra, humida stricta recta, sicca medio reflexa. Caryopsis rufa, punctulata.

Occurrunt specimina, probabiliter morbosa, quibus rudimentum ovarii utriculo laxo molli membranaceo longitudine valvulæ superioris penitus includitur.

In Insula Van Diemen. *Gunn n.* 995.

Bromus *arenarius* Labill. Var. *β. maior*, (Bromus australis R. Br. Br. arenarius Labill.) Swan River, *Drummond*.

Figures, with brief descriptions of two species of PANAX, *from New Zealand. By* W. J. H.

(TABS. XI, XII.)

Two species* of *Panax* were detected in New Zealand by Forster, his *P. simplex* and *P. arboreum.* Of these, the former has been figured by Richard, in the Botany of the "Voyage de l'Astrolabe." The second is here represented, and we have the pleasure to add a third and very remarkable species, the recent discovery of our friend Mr. Colenso.

PANAX ARBOREUM.

Fruticosum inerme, foliis longe petiolatis, foliolis 3-7 (plerumque 5) obovatis petiolulatis coriaceis serratis, umbellis compositis terminalibus axillaribusque, radiis copiosis, involucris involucellisque nullis, floribus polygamis ? (TAB. XI).

Panax arboreum. *Forst. Prodr. n.* 308. *De Cand. Prodr. n.* 253. *Schult. Syst. Veget.* 6, *p.* 213. *Rich. Fl. Nov. Zel. p.* 281. *A. Cunn. Bot. of N. Zeal. in Ann. Nat. Hist.* 2, *p.* 215.

HAB. Northern island, N. Zealand ; in shaded forests, apparently frequent. *G. Forster, D'Urville, A. and R. Cunningham, Colenso, Edgerley.*

Arbor. Truncus 12-15 pedalis, ramosus. (Rami crassiusculi, glaberrimi). Folia præcipue, ut videtur, versus ramorum apices, copiosa, magnitudine varia, una cum petiolo, spithamæa ad pedalem, digitata, 3-7 plerumque 5 foliolata, petiolulata. Foliola 3-5 pollicaria, obovata, coriacea, glaberrima, acutiuscula, superne grosse serrata inferne integerrima, basi obtusa, supra nitida subtus pallidiora, opaca. Petioli teretes, inferne latiores, basi vaginantes, vagina superne in ligulam brevem desinente. Petioluli semiunciam ad unciam longi, superne plani. Umbellæ subglobosæ, copiosæ, terminales vel laterales, compositæ. Pedunculi divergentes, 2-4 uncias longi, basi incrassati; sæpissime dense aggregati ad apicem rami. Radii numerosi, 1-2 uncias longi. Umbellulæ 10-14 floræ. Pedicelli 2-3 lineas longi. Involucrum involucellumque nulla. Flores parvi, hermaphroditi v. polygami (*A. Cunn.*). Calycis margo obsolete 5-dentatus. Petala 5 crassiuscula, apice subuncinata. Stamina 5, erecta. Filamenta brevia. Antheræ subrotundæ. Ovarium calyci adhærens, late ovatum compressum. Styli 2, breves, subdivergentes. Fructus lato-orbicularis, carnosus, compressus, didymus, utrinque sulcis 5 notatus.

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* De Candolle has, indeed, a *Panax? Lessoni;* but that is, by Richard and A. Cunningham, placed in the genus *Cussonia.*

Tab. XI. Fig. 1. Flower. f. 2, fruit; f. 3, transverse section of a fruit, *magnified.*

PANAX ANOMALUM, *n. sp.*

Fruticosum, ramis divaricatis setoso-squamulatis, foliis parvis simplicibus in petiolum articulatis rhombeo-obovatis crenatis, umbellis axillaribus simplicibus subbifloris. (TAB. XII.)

HAB. Northern Island, New Zealand. *Mr. Colenso.*

Frutex. Rami insigniter divergentes, sæpe refracti, attenuati, cortice cinereo obtecti, vetustiores scabrati, juniores undique setis seu squamis setaceis, brevibus, rigidis, appressis tecti. Folia parva, vix unciam longa, alterna, solitaria, nunc 2 ex eodem puncto, brevi-petiolata, subrotunda, obtusa, membranacea grosse crenata seu obtusissime dentata, basi acuta, et cum petiolo articulata, dentibus minute mucronulatis: ad basin petioli, et ad articulum, stipellæ 3-4 minutæ subulatæ. Umbellæ axillares, solitariæ, rarius binæ, parvæ, subbifloræ. Pedunculus et pedicelli, seu radii, vix lineam longi. Flores non vidi. Fructus lato-orbicularis, didymus, carnosus, compressus, calycis dentibus brevibus stylisque duobus longiusculis recurvatis coronatus, utrinque obsolete 5-sulcatus, bilocularis, loculis chartaceis monospermis.

Among the 45 species of *Panax* enumerated in Steudel's "Nomenclator Botanicus," 2 only are described with simple leaves: namely, *P. simplex* of N. Zealand, already alluded

to, and the very remarkable *P. cochleatum* of Molucca and Java, figured by Rumphius in the Herbarium Amboynense. With neither of these has our plant the slightest specific affinity. Indeed, with its very simple umbels, had it a herbaceous instead of a fruticose stem, I should at first sight have felt little hesitation in referring it to *Hydrocotyle*, among the *Umbelliferæ*. The stem and branches are, however, everywhere hard and woody, and probably of some size, several of my specimens, apparently only small portions of the entire plant, being 2 feet in the spread of the branches. These branches, too, are singularly divaricated, and everywhere clothed with minute tubercles, on which are placed decdous little setaceous scales. The leaves are membranaceous, jointed upon the small slender petiole: and at the joint, and also at the base of the petiole, are 3 or 4 minute stipulaceous subulate scales. The fruit appears to be so decidedly that of a *Panax*, (for I have seen no flowers), that I have little hesitation in referring it to that genus.

Tab. XII. Fig. 1. portion of a branch and leaf. *f.* 2. fruit. *f.* 3. section of ditto. *f.* 4. the fleshy substance of the fruit removed from one of the cells, showing its chartaceous substance. *f.* 5. one of the cells laid open, showing the immature pendulous seed :—*magn.*

Enumeration of LEGUMINOSÆ, *indigenous to* SOUTHERN ASIA, *and* CENTRAL *and* SOUTHERN AFRICA, *by* GEORGE BENTHAM, ESQ.

THE collections which it is the object of the following paper to publish, comprehend nearly the whole of what is hitherto known of East Indian Leguminosæ, and the greater part of those which have been deen detected in Central and Southern Africa. I have thought therefore that the most useful course to pursue, consistent with the necessary limits of this paper, is to give a complete list of all the species that have to my knowledge been published from these countries, with the general geographical range of each, and to add synonyms, diagnostic characters or descriptions, in such cases only as it may appear necessary to add to or to modify those already given in De Candolle's Prodromus, or in works quoted in Walpers's Repertorium, or to describe species now first published. I have also referred especially to the geographical stations furnished by the collections before me.

The materials from which the following paper is drawn up are chiefly the following:

The Leguminosæ distributed by Dr. Wallich under the direction of the East India Company. These were originally placed in the hands of Dr. Graham, who, with great liberality, resigned them over to me at my special request.

Dr. Royle's collection, a small portion of which I published some time since in his Illustrations.

A set of Dr. Wight's Leguminosæ, distributed in his name by Dr. Arnott.

A complete set of the late Mr. Jacquemont's Leguminosæ, transmitted to me by M. Decaisne from the Museum of the Jardin du Roi, at Paris.

An extensive collection, gathered chiefly in Northern India, and presented to me by M. P. Edgeworth, Esq.

Mr. Cuming's collection from the Philippine Islands.

A considerable number of the Leguminosæ collected by Dr. Griffith in Assam, Bhoutan, and Affghanistan for the publication of which I have received special permission from that gentleman, and which have been communicated to me by Dr. Royle, or by Sir W. Hooker.

A set gathered in Tenasserim by the late Dr. Helfer.

Col. Sykes's collection from the Punjaub.

Mr. Schimper's Abyssinian and M. Kotschy's Nubian Leguminosæ.

A very instructive set of specimens collected during the Niger Expedition by the late lamented Dr. Vogel, who had paid particular attention to this family, upon which he had published so many excellent papers in the Linnæa and in the

Nova Acta Naturæ Curiosorum. Sir William Hooker, in whose hands his collections have been placed, has kindly entrusted the Leguminosæ to me for publication.

A set of excellent Senegambian specimens collected chiefly by the late M. Heudelot, presented to me by the late M. Guillemin, in the name of Baron Delessert.

A complete set of Dr. Burchell's South African Leguminosæ, which I have received for examination from that gentleman.

An extensive collection made by Messrs. Burke and Zeyher in the interior of South Africa, communicated to me by Sir W. Hooker.

A great variety of specimens from various sources contained in Sir W. Hooker's or my own herbaria from South China, the Moluccas, various parts of the continent of India, Ceylon, the Mauritius, Madagascar, Zanzibar, Cape Colony and Sierra Leone, including a nearly perfect set of Drège's Cape plants, published by E. Meyer, of Krauss's Port Natal species published by Meissner, and a considerable number of Ecklon and Zeyher's, published in their Enumeratio.

With regard to the East Indian portion, it will be seen that I have had little occasion to remark upon or to modify what has been published on the Peninsular species by Wight and Arnott in their Prodromus, the additions which I have had to make being chiefly from other parts of India, but the Cape Leguminosæ have been singularly unfortunate in their commentators. The confusion which has been unhappily introduced into their synonomy has induced me to enter into greater length with regard to them, at least as far as authentic specimens have enabled me to ascertain them with tolerable certainty.

Before the publication of De Candolle's Prodromus, the Cape species had been chiefly described by Thunberg, whose Flora comprehends 248 Papilionaceæ, with many new genera. The descriptions are however not so detailed, and the localities not so frequently given than in some of the earlier portions of his work, and when to this is added the frequent recurrence of his common faults of giving generic characters applying often to only one of the species referred to the genus, of extracting a specific diagnosis from some other work or taking it from a different plant from the one he describes in detail, so that the diagnosis and description are often in direct opposition to each other, &c., it will readily be seen that the identifying his species must, in most cases, be mere guess-work.

De Candolle enumerated 346 Cape Papilionaceæ, but he had but few materials and was unable to clear up much of the confusion he found, although he reduced to a much better generic arrangement the few species he had means of examining. After him, Ernst Meyer, in the 7th vol. of the Linnæa, published near 50 new Cape Papilionaceæ under such of De Candolle's genera, as they appeared to him to come nearest to, but with very short diagnoses and no precise indication of generic characters, thus adding so many to the number of species undeterminable without inspection of authentic specimens.

Next appeared, in the commencement of 1836, two elaborate works on Cape Leguminosæ, written at one and the same time by different botanists without any communication with each other, each remodelling existing genera, and establishing new ones, and each publishing for the first time between two and three hundred entirely new species. These two works, the first part of Ernst Meyer's *Commentationes de Plantis Africæ Australioris*, and the second of Ecklon and Zeyher's *Enumeratio Plantarum Africæ Australis*, were actually published so nearly at the same moment, that it has become a matter of controversy which should have the priority. Dr. Walpers, adjudging it to the latter, (as has also been done by Endlicher and by Steudel), has altered Meyer's names to suit Ecklon and Zeyher's genera; whilst Dr. Meissner, on the contrary, has claimed the right for Meyer, and, consequently, re-named a considerable number of Ecklon and Zeyher's species. The facts, as far as known to the public, appear to be as follows: E. Meyer's MS.

was complete in his publisher's hands by December, 1835, and his preface bears that date, but it was not issued to the public till the 14th of February, 1836; Ecklon and Zeyher's work was probably printed off as it was completed, and was actually published, as dated on the cover, in the course of January, 1836. Upon these data, Dr. Meissner argues that Meyer's, which bears the earliest date, and was in fact first completed, is to be considered as having the priority, whilst Dr. Walpers relies strictly on priority of publication; and although in ordinary cases, the date a work bears should be taken as its real date, yet that can only be where it is not contradicted by positive evidence, and it is not, I believe, attempted to be denied that Ecklon and Zeyher's was first in the hands of the public. Much, therefore, as it is to be regretted that so carefully worked up a memoir as this portion of E. Meyer's Commentationes should be postponed, especially considering the unfair insinuations alluded to by Meissner, yet according to established rules, wherever the question is one of mere priority, it must be adjudged to Ecklon and Zeyher's Enumeratio.

The plan pursued by the author or authors of this Enumenatio (who, it has been said, was for the most part neither of those whose name it bears) appears to have been; firstly, to multiply species as much as possible, and secondly, to group them according to general aspect; thus, where a set of plants did not look like other species of known genera, all that had a general similarity of appearance have been put together, a new generic name given them, and some one species examined for a character without verifying it in the others. The consequence has been, that almost all the species, not reexamined by other botanists, must remain as mere puzzles.

Dr. Meyer's Commentationes, on the contrary, bear evidence of great pains taken in the examination of every species, and although botanists may not always agree with him in the circumscription of genera, always a more or less arbitrary matter, or in his identifications of Thunberg's plants, in which there must be so much of guess-work, yet, in all essential points, his characters and descriptions will generally be found excellent. The only circumstance which appears unintelligible is his total neglect of the above-mentioned paper of his own, inserted three or four years previously in the Linnæa. Not only does he republish many species under new names without quoting his former ones as synonyms, (which might have happened occasionally from not having retained specimens), but if he does now and then refer to his former names, it is as "mihi olim in herb. Ecklonis," treating his published paper as if it had no existence,* which unfortunately for the overloaded synonomy, other botanists do not and will not agree to do.

At a later period, in the 13th vol. of the Linnæa, Dr. Walpers attempted to consolidate into one Enumeration all the Cape species published, adding several new genera and species from materials in the Berlin herbaria. But his paper does not bear evidence of sufficient precision or care to supersede the necessity of going over the same ground again; indeed, the only genera of his which stand the test of re-examination, are those which he took up from the MS. observations of the late lamented Dr. Vogel, and many of his hasty alterations are but so many needless additions to the synonomy.

Dr. Meissner again in this Journal, (vol. 2. p. 60), has published Krauss's Cape plants with considerable care and exactness, but, having, as above mentioned, claimed for E. Meyer the priority over Ecklon and Zeyher, he has made a great number of changes in nomenclature which will not be generally adopted. Thus there are now perhaps very few sets of plants which have so great a mass of synonyms, certain or doubtful, as the six or seven hundred South African Papilionaceæ. And it is with great regret that I have found myself on the present occasion obliged still farther to add to them; but having before me a great variety of specimens from different collections and in different states, it has appeared to me, upon a careful examination, absolutely necessary to re-model several of even Meyer's genera, in the endeavour to render them as conformable to nature as possible, and especially to characterize them so as really to include the species attributed to them.

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* Can it be possible that Dr. Meyer, living at a considerable distance, was not really aware that his paper had been actually printed, especially as, by some singular mistake, it is not inserted in the table of contents of the volume which contains it.

Sub-Order PAPILIONACEÆ.

Corollæ æstivatio imbricata, papilionacea; vexillo exteriore, carina interiore, alis intermediis.

Tribe I. PODALYRIEÆ. *Benth. in Ann. Mus. Vind.* 2, *p.* 65.

Filamenta omnia libera. Legumen continuum. Folia simplicia v. palmatim composita.

Sub-Tribe EUPODALYRIEÆ.

Ovarium pluri-ovulatum. Legumen uniloculare.

In my above-mentioned memoir, I enumerated three genera only of this sub-tribe as belonging to the northern hemisphere. Since that time, however, I have seen the fruits of a considerable number of species, and an entirely new genus has been proposed by Nuttall for a Californian plant, of which the fruit is unfortunately as yet unknown. I should now therefore propose to adopt the five following genera, which must probably be either all kept distinct, or else all joined together as sections of *Anagyris*.

Anagyris.—Vexillum alis brevius, lateribus non reflexis. Legumen stipitatum planum. Frutices Regionis Mediterraneæ, stipulis connatis oppositifoliis.*

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* Tenore, in distinguishing his A. *neapolitana*, (Syll. Fl. Neap. p. 198), says that the true A. *fœtida* has a cylindrical pod, which I have never seen; nor can I perceive any real difference between his A. *neapolitana*, and that which is usually considered as A. *fœtida*, and which I have from Gibraltar, from Arles in France, and from various parts of Italy and

Pipanthus.—Corolla *Thermopsidis.* Legumen, stipulæ et habitus *Anagyreos.* Frutex Himalayanus.

Thermopsis.—Vexillum alas subæquans lateribus reflexis. Calyx basi attenuatus. Stamina persistentia. Herbæ, stipulis distinctis lateralibus plerisque foliaceis.

Sect. I. *Euthermopsis.*—Legumen lineare, oblongum, v. ovatum, membranaceum, plus minus inflatum, nonnunquam stipitatum. Species Asiaticæ.

Sect. II. *Baptisioides.*—Legumen sessile, lineare, subcoriaceum, non inflatum. Species Americanæ.

Baptisia.—Corolla *Thermopsidis.* Calyx basi vix attenuatus, brevius campanulatus. Stamina decidua. Legumen stipitatum, inflatum, ovatum v. globosum, coriaceum v. rarius membranaceum. Herbæ Americanæ, stipulis distinctis parvis v. foliaceis.

Pickeringia.—Calyx et corolla *Baptisiæ.* Legumen ignotum. Frutex Californicus.

To the Cape genera of *Podalyrieæ* no addition has been made; the two tropical or subtropical genera mentioned in my memoir, viz: *Dalhousiea* and *Delaria,* (to which last belong *Bracteolaria,* Hochst. and one of G. Don's species of *Carpolobium*) should rather be referred to *Sophoreæ,* on account of the straight radicle, and the less decidedly papilionaceous corolla. The simple leaves have also more the appearance of pinnate than of palmate leaves reduced to the terminal leaflet.

I. PIPTANTHUS. *D. Don.*

1. P. *Napalensis* D. Don! in Sweet Brit. Fl. Gard. t. 264. —*Thermopsis Napalensis,* D.C! Prodr. 2, p. 99. *Baptisia Napalensis,* Hook! Exot. Fl. t. 131. *Anagyris Napalensis,* Grah! in Wall. Cat. n. 5340. *Anagyris Indica* of gardens.

Shady places in the Himalayas: Choor, *Royle! Jacque-*

Greece. A. *latifolia* from the Canary Islands appears to be a good species, as is also apparently one gathered in Arabia by Mr. Botta and communicated to me by M. Decaisne, but of which I have not seen the pod.

mont! Edgeworth!; Urukta, *Royle!*; Jumnotri, *Jacquemont!*; Kamaon, *Blinkworth!*; Napal, *Wallich!*; Bhootan, *Griffith!*.

II. THERMOPSIS. *R. Br.*

Sect. *Euthermopsis.*

1. T. *barbata* (Royle !* Illustr. Himal. p. 196, t. 34, f. 1), pilis longis hirta, foliis 1-3-foliolatis, foliolis oblongis stipulisque subsimilibus margine patentim pilosis utrinque glabris v. longe et parce pilosis, calycibus pilosis, legumine oblongo v. ovato vix falcato piloso demum leviter inflato.—*Anagyris? barbata* Grah! in Wall. Cat. n. 5341.—A larger plant than T. *alpina*. The lower leaves of the sterile branches are sometimes opposite, and the leaflets, quite sessile and similar to the stipules, assume with them the appearance of a verticil of six to eight simple leaves. Some of the leaves have occasionally a petiole of several lines in length.

Grassy, wild places in the Himalaya: Urukta, *Edgeworth!* Shalkur, in Kunawur and on the road to Cashmere, *Royle!* Vernaque on the Banhatti range, *Jacquemont!* Kamaon, *Blinkworth!* also in Gossaingsthan? *Wallich!*

2. T. *inflata*. (Camb! in Jacquem. Voy. 4, p. 34, t. 39), piloso-hirta, foliis 1-3-foliolatis, foliolis obovatis apiculatis supra glabris subtus pilosis, stipulis bracteisque ovatis obovatisve foliolis vix brevioribus, floribus pedicellatis paucis, calycibus pilosis, legumine stipitato falcato-ovato valde inflato pilosiusculo.—A very low species with short spreading branches, the leaflets from half to three fourths of an inch long.

Stony places in the mountains of the province of Kunawur, at an altitude exceeding 4000 metres, *Jacquemont!*

The only other species I am acquainted with, belong to the section *Euthermopsis*, are the Siberian T. *lanceolata* Br. and T. *alpina*, Ledeb. (T. *corgonensis*, D.C.)

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* The characters and descriptions of the Leguminosæ, figured in Dr. Royle's work, were drawn up by that gentleman himself. All that I contributed was the enumeration of Himalayan Leguminosæ of European forms printed in double columns.

The N. American section *Baptisioides* comprehends T. *rhombifolia*, Nutt.; T. *fabacea* D.C., (at least as to the N. American specimens which include T. *montana*, Nutt.), T. *fraxinifolia*, M.A. Curt. in Sillim. Jour. 44, p. 81, T. *Caroliniana*, M. A. Curt. l.c. p. 80 and T. *macrophylla* Hook. et Arn.

III. Cyclopia. *Vent.*

Sect. I. *Encyclopia Benth. in Ann. Mus. Vind.* 2. *p.* 67.

1. C. *latifolia*, (DC.! Prodr. 2 p. 101, non alior.), glabra, foliolis ovatis v. ovato-lanceolatis basi truncatis cordatisve, bractea exteriore pedicellum æquante, laciniis calycinis acutis. —C. *cordifolia*, Benth. in Ann. Mus. Vind. 2. p. 67.

I have only seen this species without any precise station in *Scholl's* collection in the Vienna herbarium and in *De Candolle's* herbarium. No. 5893 of *Burchell's* Geogr. Cat. may be the same species, but is not far enough advanced to determine.

2. C. *subternata*, (Vog! Linnæa 10. p. 595,) glabra, foliolis subplanis oblongo-ellipticis utrinque obtusis v. rarius angustatis supremis linearibus imfimis subovatis, bractea exteriore pedicello breviore v. rarius subæquilonga, laciniis calycinis acutis, vexillo integro mucronato.—C. *latifolia*, E. Mey.! Comm. p. 3. Benth. l.c. non DC. C. *grandifolia*, Alph. DC. Not. 8 Pl. Rar. Jard. Gen. p. 29.

In the Drakenstein and Bosjesveld mountains, *Drège! Mundt* and *Maire!*, *Burchell!* Cat. n. 5519 and others.

3. C. *brachypoda*, (Benth! l.c.), glabra, foliolis lineari-oblongis margine revolutis, pedicello calyce bracteisque breviore, laciniis calycinis acutis, vexillo emarginato.—C. *sessiliflora*, Eckl. et Zeyh! Enum. p. 154 non E. Mey.

Mountains of Swellendam. *Ecklon* and *Zeyher!*

4. C. *intermedia*, (E. Mey.! Comm. p. 3, excl. lit. *c?*), glabra, foliolis ex oblongo linearibus basi angustatis margine

revolutis, bractea exteriore pedicellum brevem subæquante, laciniis calycinis latis obtusis, vexillo emarginato.

In rocky places in the mountains near Swellendam and on the Keureboom river near George, *Drège!* also *Burchell!* Cat. n. 4929. E. Meyer under the letter *c* gives a third station in the valleys and moist places of the Paarlberg, from whence however I have seen no specimen. May not this letter *c* be a variety of C. *subternata?*, a common species in that district, and which has the divisions of the calyx acute as described by Meyer, and not obtuse as in all the specimens I have seen of the letters *a* and *b*.

5. C. *laxiflora*, (Benth.! in Ann. Mus. Vind. 2. p. 67), glabra, foliolis oblongo-spathulatis sublinearibusve basi angustatis planis, bracteis pedicello pluries brevioribus apice subrecurvis, laciniis calycinis latis obtusis.—C. *latifolia*, Eckl. et Zeyh! Enum p. 154 non alior.

Mountains of Knysna and of Plettenburg Bay in the George district; *Mundt* and *Maire!*

6. C. *longifolia*, (Vogel, Linnæa, 10. p. 595), glabra, foliolis elongato-linearibus obtusis subplanis basi angustatis, bracteis pedicellos subæquantibus striatis apice recurvis, laciniis calycinis acutiusculis.

I saw specimens of this plant at Vienna, named by Vogel and gathered by *Mundt* and *Maire*, but I have no note of the precise station.

7. C. *tenuifolia*, (Lehm! Linnæa, 5. p. 373), glabra, foliolis lineari-subulatis margine revolutis, bracteis latissimis carinatis lævibus pedicello brevioribus, laciniis calycinis obtusis.—C. *laricina*, E. Mey.! Comm. p. 153.

Mountains of Swellendam and George, *Ecklon* and *Zeyher! Mundt* and *Maire! Drège! Burchell!* Cat. n. 7522.

Sect II. *Ibbetsonia, Benth. l.c.*

8. C. *pubescens*, (Eckl. et Zeyh! Enum. p. 154), ramulis pubescentibus, foliolis linearibus margine revolutis, bracteis sulcato-striatis apice recurvis pedicello brevioribus, laciniis calycinis lanceolatis subulato-acuminatis.

Among shrubs on the Krakakamma plains, and declivities of the Vanstaaden's river hills, in Uitenhage, *Ecklon* and *Zeyher !*

10. C. *genistoides*, (R. Br.—DC. Prodr. 2. p. 101), glabra v. apice puberula, foliolis lineari-teretibus margine revolutis, laciniis calycinis lanceolatis acutis mucronulatisve, bracteis carinatis lævibus pedicello brevioribus. C. *genistoides*, C. *heterophylla* et C. *teretifolia*, Eckl. et Zeyh ! Enum. p. 154. C. *genistoides* et C. *galioides*, E. Mey. ! Comm. p. 3.

Common in plains and on the lower hills of the S. West districts from the Cape Flats to the Zonder-Einde river.

11. C. *galioides*, (DC. Prodr. 2. p. 101) superne hirsuta, foliolis lineari-teretibus margine revolutis crassis, laciniis calycinis lato-lanceolatis mucronatis glabris, bracteis carinatis glabris lævibus acutis, exteriore pedicello longiore.—Robustior quam C. *genistoides*, foliolis crassioribus, pedicellis brevioribus, et fere inter hac et C. *sessiliflora* media.

Moist declivities of the mountains near Simon's Town and of the Table Mountain above Constantia, *Ecklon* and *Zeyher !* Muysenberg Mountains, *Burke !* also in other collections from the neighbourhood of Cape Town, but apparently at a much greater elevation than C. *genistoides*.

12. C. *sessiliflora*, (E. Mey. ! Comm. p. 4, non Eckl. et Zeyh.), superne molliter pilosa, foliolis lineari-teretibus margine revolutis, bracteis latissimis acuminatis nitidis margine pilosis, calycibus sessilibus laciniis lanceolatis pilosis. —C. *Meyeriana*, Walp. ! Linnæa, 13. p. 454.

Moist rocks of the Dutoit's Kloof Mountains, *Drège !* also n. 7770 of *Burchell's* catalogue,

IV. PODALYRIA. *Lam. ex parte, DC.*

The difficulties attending the discrimination of the species of this genus are well explained by E. Meyer, (Comm. p. 4), and what he observes of the very different appearance of the vigorous shoots thrown out from the root of a bush that has been burnt, from that of the branches of natural growth, is fully borne out by specimens gathered under similar circumstances by Mr. Harvey and others. This renders the form of the leaves, a very uncertain test of species. Their venation, the nature of the hairs which clothe the leaves, calyx and pod, and the proportion of the calyx to the corolla as pointed out by E. Meyer, to which I should add the form of the bracts and pod, when the specimens are such as to show them, must be the chief characters relied on, assisted indeed by the form of the leaves but in a less absolute manner. Dr. Walpers has indeed established sections upon the form and clothing of the leaves, but the characters of several of his species are often in contradiction to those of the sections under which they are placed.

As a genus, *Podalyria* is perfecly distinct, its nearest affinity is perhaps with *Priestleya,* but although some *Podalyrias* have their stamens slightly connected at the base, and some *Priestleyas* have the staminal tube deeply divided, yet there is always difference enough, even in this respect, to prevent the two genera from being confounded.

Series I. *Nitidæ.*—Folia supra glaberrima, nitida, subtus sericea v. villosa, venis lateralibus indistinctis.

1. P. *speciosa,* (Eckl. et Zeyh! Enum. p. 157), foliis inferioribus ellipticis oblongisve supremis oblongo-linearibus margine revolutis aveniis supra nitidis subtus dense sericeis, pedunculis folio multo brevioribus, calycibus rufo-villosis.—Readily distinguished, at least in Ecklon's specimens, by the length of the leaves, much greater than in any other species.

Summits of the Hottentots-Holland Mountains, *Ecklon* and *Zeyher !*

2. P. *glauca,* (DC. Prodr. 2. p. 102), foliis ex obovato v. ovali oblongis obtusis mucronulatis margine revolutis aveniis supra nitidis subtus dense sericeis, pedunculis folio multo longioribus, calycibus rufo-sericeis, laciniis lateralibus carinam æquantibus.—P. *buxifolia,* Lam. Illustr. 2 p. 471, t. 327, f. 4. E. Mey ! Comm. p. 7. P. *Mundtiana,* Eckl. et Zeyh. Enum. p. 156 et P. *sparsiflora,* p. 157.

Mountains of Swellendam and George, *Drège! Mundt! Bowie! Burchell!* (n. 5118) etc.

Whatever may be the specimen contained in Willdenow's herbarium, it is clear that this is the P. *buxifolia* of Lamarck quoted by Willdenow as a synonym to his species, and I have little doubt, but that the following is Retz's plant, described by De Candolle from authentic specimens. Both have the leaves smooth above and may possibly be mere varieties of each other. If Willdenow's herbarium contains under that name a plant, "foliis utrinque sericeis" as one would suppose from the section in which Walpers places it, it cannot surely be the one described by Willdenow in his Species Plantarum.

3. P. *buxifolia* (Willd.? spec. 2, p. 505, ex parte, DC. Prodr. 2, p. 102), foliis late ovatis obovatisve subplanis supra nitidis subtus dense sericeo-lanatis aveniis, pedunculis folio æquilongis longioribusve 1-2-floris, calycibus rufo-villosis, laciniis lateralibus carina multo brevioribus.—P. *glauca β biflora*, Eckl. et Zeyh.! Enum. p. 157.

Hills between Swellendam and Kokman's-Kloof; *Ecklon* and *Zeyher!*

4. P. *orbicularis* (E. Mey.! Comm. p. 8), foliis orbicularibus margine revolutis aveniis supra nitidis subtus dense ferrugineo-villosis, pedunculis folio æquilongis longioribusve 1-2-floris, calycibus rufo-villosis, laciniis lateralibus carina multo brevioribus.—*Crotalaria orbicularis*, E. Mey.! Linnæa 7, p. 151.

Hills and sides of mountains near Caledon, viz. near the baths, *Ecklon!* Gnadendal, *Drège!* Baviaans-kloof, *Krauss.*

The specimens I have seen in different herbaria of the two preceding species are scarcely sufficient to give any accurate idea of their limits.

Series II, *Villosæ.* Folia utrinque tomentosa, tomento in pagina superiore sæpius sericea in inferiore laxiore, venis primariis et sæpe venulis reticulatis subtus plus minus prominulis. Bracteæ latissimæ, involucrantes nec calyptræformes.

5. P. *cordata* (R. Br.—DC. Prod. 2, p. 102) undique villosa, foliis orbiculatis lato-ovatisve basi nonnunquam subcordatis concaviusculis utrinque dense lanato-villosis, pedunculis folio brevioribus calycibusque rufo-villosissimis, laciniis calycinis lanceolatis carinam subæquantibus.

Moist places and banks of streams in the mountains near the Cape; at the foot of the Hottentots-holland mountains, *Ecklon* and *Zeyher!* Dutoits-kloof, *Drège!* also *Burchell!* n. 8157.

6. P. *canescens* (Eckl. et Zeyh.! Enum. p. 158; E. Mey.! Comm. p. 9), ramis villosis, foliis orbiculatis ovatis v. obovatis subplanis supra sericeo-villosis subtus reticulatis tomentoso-villosis lanatisve, pedunculis 1-3-floris folio brevioribus v. paullo longioribus, calycibus appresse villosis, laciniis latiuscule lanceolatis carinam vix æquantibus.—P. *Thunbergiana*, P. *amæna*, et *intermedia*, Eckl. et Zeyh.! Enum. p. 155. —Intermediate between P. *cordata* on the one hand, and P. *myrtillifolia* and P. *Burchellii* on the other, it is easily distinguished by the reticulate venation perceptible on the underside, sometimes nearly as much as in P. *calyptrata*, from which it always differs in the woolly leaves as well as by the bracts. Mr. Harvey has sent specimens of young shoots of this species from plants which had been burnt down, with the leaves above two inches long, and the peduncles bearing two or three flowers, half as large again as usual.

Common in the Cape district, from Paarl to Hottentots-holland, in stony and clayey soils, amongst bushes. *Ecklon* and *Zeyher! Drège! Burchell!* n. 6869, and others.

7. P. *velutina* (Burch.! Cat. Geogr. n. 3565 et 6984), ramulis tomentosis, foliis oblongis crassiusculis supra tenuius subtus densius velutino-tomentosis venis subtus leviter prominentibus, pedunculis unifloris brevibus, calycis villosissimi laciniis lanceolatis carina subbrevioribus.—Near P. *Burchellii*, but the wool is appressed, the leaves are usually three times as long as broad and never ovate, and the hairs of the pod are much longer.

Albany district, Zeyher, n. 207! and in *Burchell's* collection.

8. P. *Burchellii* (DC.! Prod. 2, p. 101), ramulis tomentosis, foliis crassiusculis ovatis ellipticisve supra tenuius subtus densius sericeo-villosis, venis subtus leviter prominulis, pedunculis unifloris brevibus nunc brevissimis, calycis villosissimi laciniis lato-lanceolatis carina brevioribus.—P. *Burchellii* et P. *lancifolia*, Eckl. et Zeyh.! Enum. p. 156.—The bracts are remarkably reticulate in this species, and but slightly so in the two preceding.

Stony places on the sides of hills, in the districts of Uitenhage and Albany, *Ecklon* and *Zeyher! Burchell!* n. 3475 and 5175; *Zeyher!* n. 824 and 915.

9. P. *lanceolata* (Benth.! in Ann. Mus. Vind. 2, p. 68), ramulis tomentosis, folis oblongo-lanceolatis utrinque tenuiter pubescentibus v. junioribus sericeo-villosis subtus reticulato-venosis, pedunculis unifloris folio subtendente brevioribus v. rarius æquilongis, calycis rufo-villosi subsericei laciniis lanceolatis acutis carinam æquantibus.—P. *calyptrata β? lanceolata*, E. Mey.! Comm. p. 10.—Besides the decided difference in the bracts and in the form of the leaves, this plant is more woolly than P. *calyptrata*, the hairs of the calyx less appressed, the peduncles much shorter, and the bud never so obtuse as in that species. It is much nearer to P. *velutina.*

Along streams in the district of Zwellendam, *Mundt! Drège!*

Series III, *Calyptratæ.* Folia utrinque pubescentia subtus reticulato-venosa. Bracteæ latissimæ, connatæ in calyptram basi circumscissam.

10. P. *calyptrata* (Willd. Spec. 2, p. 504), foliis obovato-ellipticis, calycis adpresse rufo-pubescentis laciniis lanceolatis carinam subæquantibus.—P. *styracifolia*, Sims, Bot. Mag. t. 1580; DC. Prod. 2, p. 102. P. *myrtillifolia*, Eckl. et Zeyh.! Enum. p. 156 non Willd.

Moist places on the hills from the Table Mountain, near

Capetown to the Zwarteberg, near Caledon, *Drège! Ecklon* and *Zeyher! Mundt! Burchell!* n. 8510, and others.

Series IV. *Sericeæ.* Folia utrinque sericea v. sericeo-villosa, venis sub pube reconditis v. rarissime in foliis vetustis prominulis. Bracteæ latæ v. angustæ, non calyptræformes.

11. P. *myrtillifolia* (Willd.—DC. Prod. 2, p. 101), foliis ovatis rarius orbiculatis obovatisve v. in ramulis oblongis crassiusculis, utrinque præsertim subtus sericeo-pubescentibus villosisve, aveniis v. subtus obscure venosis, pedunculis 1-2-floris folio brevioribus v. parum longioribus, calycis rufo villosi laciniis acutis tubo suo longioribus carina brevioribus, legumine hirsutissimo.—P. *buxifolia*, Eckl. et Zeyh.! Enum. p. 157 non Willd.—A very variable species, but of which I have generally seen very incomplete specimens, and I do not feel sure that I have properly distinguished it from P. *buxifolia* on the one hand, and P. *biflora* on the other. The small-leaved variety, mentioned by E. Mey! Comm. p. 8, which is probably the P. *parvifolia*, DC. Prod. 2, p. 102, and P. *microphylla*, E. Mey. Linnæa 7, p. 147, may possibly prove a distinct species.

Hills in the Cape, Stellenbosch and Caledon districts.

12. P. *subbiflora* (DC.? Prod. 2, p. 102), foliis ovatis obovatis oblongisve crassiusculis supra plus minus subtus dense sericeo-villosis, pedunculis folio multo longioribus sæpius bifloris, calycis ferruginei crispo-villosi laciniis latis tubo suo et carina brevioribus.—P. *biflora* Sims, Bot. Mag. t. 753, E. Mey.! Comm. p. 6, non Lam. P. *racemulosa*, DC.? Prod. 2, p. 102.—Near P. *myrtillifolia*, but readily distinguished by the calyx.

Foot of the Table Mountain, near Cape Town, *Drège! Harvey!*, etc.

13. P. *biflora* (Lam. Illustr. 2, p. 471, t. 327, f. 3), foliis ovatis obovatis oblongisve utrinque sericeis, pedunculis folio multo longioribus plerisque bifloris, laciniis calycinis lanceolatis acutis tubo longioribus carina brevioribus, legumine villosissimo.—P. *liparioides*, DC! Prod. 2, p. 102. P. *myrtillifolia*, *β. liparoides*, E. Mey.! Comm. p. 8.—From La-

marck's figure, especially as to the calyx, it is evident that it was taken from this species, and not from the preceding one.

Cape District, *Sieber!* n. 53, *Burchell!* n. 5132. Klein Drakenstein and Paarl, *Drège!*

14. P. *cuneifolia* (Vent. Hort. Cels. t. 99). foliis obcordatis obovatis v. cuneato-oblongis utrinque sericeis, pedunculis unifloris rarius bifloris folio brevioribus v rarius longioribus, bracteis cuneatis, calycis adpresse sericei v. subvillosi laciniis e basi lata acutis carina duplo brevioribus, legumine villoso.—P. *hamata* et P. *albens*, E. Mey.! Linnæa 7, p. 146.—P. *pallens*, P. *patens* et P. *splendens*, Eckl. et Zeyh.! Enum. p. 158, 159.—A very common plant, with a closer appressed pubescence than any of the preceding, but much less silky and very different from the P. *sericea*, for which Walpers and others have mistaken many of its forms. Besides the usual variations in the form of the leaves, the degree of hairiness, the length of the peduncles and size of the flower, this species varies much in the colour of the corolla, and on that account was named P. *versicolor* by Burchell, and is so called in some gardens.

Apparently very common in grassy low places, eastward of the Cape from Caledon and Tulbagh, through the districts of Zwellendam and George, to the Zwartkops River in Uitenhage.

15. P. *sericea* (Br.—DC. Prod. 2, p. 101), foliis obovatis v. cuneato-oblongis utrinque sericeo-nitentibus, pedunculis unifloris folio brevioribus, bracteis linearibus, laciniis calycis sericei anguste lanceolatis acutis carinam æquantibus, legumine sericeo.—Leaves often like those of P. *cuneifolia*, but readily known by the calyx.

Cape Flats and Table Mountain, *Drège! Ecklon* and *Zeyher!* but probably not common, as it is seldom to be seen amongst Cape collections.

TRIBE II, *Loteæ*, DC.

This tribe was established by De Candolle, to include all Papilionaceæ with a curved embryo and stamens more or less combined, which have neither the articulate pod of *Hedysareæ*, nor the fleshy cotyledons remaining unchanged at the period of germination by which he distinguished *Vicieæ*, *Phaseoleæ* and *Dalbergieæ*. The latter character is one which is unfortunately practically useless, as it cannot be verified in the full-grown plant, and has never been ascertained in the great majority of species, but as I am not acquainted with any other positive distinction between the *Loteæ* as a whole and the three other last-mentioned tribes, I shall endeavour, with regard to each sub-tribe, to consider it as a substantive tribe, and suggest characters by which each one may be distinguished from all other papilionaceous tribes.

Sub-tribe I, LIPARIEÆ.

Folia simplicia. Alæ transverse plicatæ. Stamina 9 connata, decimum vexillare liberum, rarissime (in *Coelidio* ovario uniovulato) cum cæteris leviter connatum. Ovarium uni-v. pluri-ovulatum. Legumenin articulatum, bivalve. Frutices Austro-Africani, inflorescentia axillari v. terminali nec oppositifolia. Folia alterna, exstipulata.

This small sub-tribe comprehends the diadelphous *Genisteæ* of De Candolle, which would on that account, strictly speaking, belong to his sub-tribe of *Trifolieæ*, from which they are removed by their habit and foliage, and characterized with tolerable accuracy by the plicate alæ of the corolla which they have in common with the *Genisteæ*. Of the five genera which I here unite, all South African, *Liparia* and *Priestleya* are very near to *Podalyria*, but distinguished by the artificial character of the diadelphous stamens. *Amphithalea*, *Lathriogyne* and *Coelidium* have the remarkable appendage to the carinal petals which was considered as characteristic of *Indigofera*, but have neither the habit nor the hairs of that genus, nor the glanduliferous anthers of the sub-tribe to which it belongs. These three genera have also some resemblance to *Campylotropis* and *Lespedeza* amongst *Hedysareæ*, and all but two of the species have, like them, uniovulate ovaria, but the pod is dehiscent, and not reticulated, as in all the one-jointed *Hedysareæ*.

The inflorescence is much nearer that of *Podalyrieæ* than of most *Genisteæ*. The peduncles, generally very short, one-flowered or shortly racemiferous, are placed either in the axils of the upper leaves, reduced to mere bracts, so as to form a terminal head or short raceme, or, if the floral leaves retain the appearance of the cauline ones, the stem usually continues to grow, so that the peduncles at length become axillary along the stem.

The following are the most important distinctive characters of the genera.

Liparia. Calycis lacinia infima maxima, petaloidea, colorata. Flores flavi capitati, bracteis magnis imbricatis involucrati.

Priestleya. Calycis lacinia infima superioribus æqualis v. paullo longior. Carina incurva, lateribus inappendiculata. Ovarium pluri-ovulatum. Legumen oblongum v. lineare. Flores flavi, in capitulum v. racemum brevem congesti v. rarius axillares.

Amphithalea. Calyx subæqualis. Carina rectiuscula, obtusa, lateraliter appendiculata. Ovarium 1- v. pauci-ovulatum. Legumen ovatum 1-2-spermum, rarius oblongum oligo-spermum. Flores purpurascentes carina intensius colorata, axillares v. in spicam foliosam approximati.

Lathriogyne. Calyx, ovarium et legumen *Amphithalearum* uniovulatarum. Corolla calycem vix superans, carina incurva rostrata. Flores flavi, subcapitati.

Coclidium. Omnia *Amphithalearum* uniovulatarum nisi filamenta omnia (sæpius breviter) connata. Folia involuta nec ut in præcedentibus plana v. revoluta.

V. LIPARIA, *Linn. ex parte, DC.*

1. L. *sphærica* (Linn.! DC. Prod. 2, p. 121), ramis glabris, foliis erectis lanceolato-oblongis mucronato-acutis 5-7-nerviis, bracteis glabris eciliatis, calycis glabri lacinia inferiore eciliata, superioribus ciliatis.

Stony and clayey situations near Cape Town, sides of the Table Mountain, etc. *Ecklon* and *Zeyher! Drège! Burchell!* n. 8585, and others.

2. L. *comantha* (Eckl. et Zeyh.! Enum. p. 164.) ramis pilosulis mox glabratis, foliis oblongis mucronato-acutis 5-7-nerviis, bracteis eciliatis, calycis extus pilosi lacinia inferiore vexillo paullo breviore eciliato intus villosissimo, superioribus villosis ciliatis.—Habit, and size of heads of flowers nearly as in L. *sphœrica,* from which, however, it appears to be constantly distinct.

Rocks above Hottentots-hollands-kloof, *Ecklon and Zeyher!* I have seen it also in other collections.

3. L. *Burchellii* (sp. n.), ramulis glabris, foliis lanceolato-oblongis mucronato-acutis crassis obscure sub 5-nerviis, bracteis ciliatis, calycis undique pilosi laciniis omnibus ciliatis intus villosis inferiore vexillo dimidio breviore.—Size of heads as in the two last; leaves longer and narrower and quite distinct by the calyx.

Cape Colony, *Burchell!* n. 6881.

4. L. *parva* (Vog. ex Walpers Linnæa, 13, p. 468) caule gracili ramoso piloso, foliis patentibus reflexisve ovato-ellipticis oblongisve acuminatis trinerviis, bracteis orbiculatis acuminatis foliorum circiter longitudine margine barbato-ciliatis, calycis extus undique pilosi laciniis lanceolato-ellipticis longe barbatis, inferiore vexillo parum breviore.—Hook. Bot. Mag. t. 4034.—Heads of flowers, not above half the size of those of the three preceding species and habit near that of a *Priestleya.*

Interior of South Africa. *Bowie.* Long cultivated in the Botanical Gardens, Kew. Cape Colony. *Forbes!*

5. L. *crassinervia,* Meissn. Described in this Journal,

p. 63 of the present volume, appears to differ but slightly from the preceding species, but I have not seen any specimens of it.

Cape District. *Krauss.*

VI. PRIESTLEYA. *DC. ex parte, E. Mey.—Priestleya et Xiphotheca Eckl. et Zeyh.*

This genus, as above characterised, contains all E. Meyer's species excepting the *P. axillaris*, which has more of the character as it has entirely the habit of *Amphithalea.* The two sections, first established by De Candolle, but modified as to limits, both by E. Meyer, and Ecklon and Zeyher, though somewhat different in habit, yet run much into one another and are not distinguished by any essential character. It appears better, therefore, with E. Meyer to retain them as mere sections, not as distinct genera, as established by Ecklon and Zeyher.

Sect. 1. *Isothea* DC. Calyx basi demum intrusus. Carina rostrata. Habitus fere *Lipariæ.* Frutices siccitate sæpius nigricantes, glabri v. pilis longis laxis villosi.

1. P. *graminifolia* (DC. Prod. 2 p. 122,) foliis lanceolatis v. lineari-lanceolatis acutis uninerviis ramulisque glabris, floribus pedicellatis in capitulo oblongo, bracteis lanceolatis pilosis, calycis pilosi laciniis tubo triplo longioribus, superioribus lanceolatis, infima oblonga paullo longiore membranacea.—*Liparia graminifolia* Linn! Mant. p. 268.—*Crotalaria genistoides* Lam. Dict. 2. p. 196, belongs probably to this or the following species.

Cape Colony, *Forbes!*

2. P. *angustifolia* (Eckl. et Zeyh! Enum. p. 165,) foliis lanceolato-linearibus acutis concaviusculis obscure uninerviis glabris v. superioribus ramulisque pilosis, bracteis lanceolatis acutis pilosulis, floribus pedicellatis, calycis pilosi laciniis lanceolatis subulato-acutis, infima superioribus dimidio longiore.—P. *umbellifera* E. Mey. Comm. p. 17 an DC?—I have considerable doubts whether this is Thunberg's *Liparia umbellifera,* which appears to me rather to refer to P.

cephalotes, but it is not sufficiently described to ascertain it with certainty.

Hottentots-holland and Klynriver mountains *Ecklon and Zeyher!* and in several other collections.

3. P. *lævigata* (DC. Leg. Mem. p. 195, t. 30,) foliis oblongo-linearibus acutiusculis obscure uninerviis glabris v. superioribus ramulisque adpresse pubescentibus, bracteis lanceolatis ovatisve acutis concavis pubescentibus, pedicellis bracteas superantibus, calycis pubescentis v. adpresse pilosi laciniis ovatis v. breviter oblongis mucronulatis v. acutiusculis.—*Crotalaria capitata* Lam. Dict. 2. p. 195, Illustr. t. 617. t. 3?.—This is certainly different from P. *capitata* and easily known by its long pedicels and narrow bracts, but of the synonyms quoted by De Candolle, *Borbonia lævigata* Linn. and L. *lævigata* Thunb. are hereafter referred to under P. *Thunbergii.* Linnæus's character of *Liparia umbellata* agrees better with P. *lævigata* DC. but in the Linnæan herbarium the P. *hirsuta* and P. *cephalotes* are named L. *umbellata.*

Cape Colony. I have only seen it among Dr. Thom's plants in Sir W. Hooker's herbarium.

4. P. *cephalotes* (E. Mey! Comm. p. 18. excl. syn. Lam.,) foliis oblongis acutis concavis demum planis uninerviis utrinque ramulisque subsericeo-pilosis demum glabratis, bracteis lato-ovatis concavis mucronatis pilosis, floribus breviter pedicellatis, calycis pilosissimi laciniis oblique ovatis subæqualibus obtusis.

Mountains of Stellenbosch district, Piquetberg and Cedarbergen in Clanwilliam district. *Drège!*

5. P. *capitata* (DC.! Prod. 2. p. 121,) foliis oblongo-linearibus acutis convolutis concavisve enerviis ramisque glabris v. superne hirsutis, bracteis lato-ovatis concavis obtusis v. mucronulatis, floribus subsessilibus, calycis hirsutissimi laciniis obtusis infima apice coriacea nitidula cæteris paullo longiore.—*Liparia capitata* Thunb. Fl. Cap. p. 566. *Priestleya lævigata,* E. Mey.! Comm. p. 18. non DC.

Mountains near Cape Town.—Summit of the Table mountain *Thunberg.* Dutoits-Kloof and Gnadendal *Drège! Burchell!* n. 591.

6. P. *hirsuta* (DC. Prodr. 2. p. 121,) ramulis pilosis, foliis obovato-oblongis mucronato-acutis obscure 3-5-nerviis glabris v. supremis pilosulis, bracteis ovatis villosis rigide acuminatis, calycis hirsuti laciniis lato-lanceolatis acutis, legumine hirsutissimo.

Moist rocky hills in the districts of George and Uitenhage, *Drège! Ecklon and Zeyher! Burchell!* n. 3745 and 4589, *Zeyher!* n. 298, *Krauss,* n. 914 etc. Not uncommon in green-house collections.

P. *teres* (DC. Prod. 2. p. 122,) taken up from the *Liparia teres* of Thunberg, is probably one of the preceding species, but too imperfectly described to be determined.

7. P. *Thunbergii,* foliis late oblongis inferioribus subovatis superioribus lanceolatis acutis uninerviis ramisque glabris v. superne pilosis, floribus subquaternis laxe umbellatis, bracteis ovatis coloratis concavis pedicellos vix æquantibus, pedicellis calycibusque molliter villosis, calycis laciniis latis acuminatis.—*Borbonia lævigata* Linn! Mant. p. 100. *Liparia lævigata,* Thunb. Fl. Cap. p. 566. *Liparia villosa* Sieb! Fl. Cap. exs. n. 162. *Priestleya umbellifera* Walp. Linnæa, 13. p. 469. Eckl. et Zeyh. Enum. p. 165? non DC. Near P. *myrtifolia* but distinct.

Mountains near Cape-Town *Sieber! Mundt! Burchell!* n. 8646 &c.

8. P. *myrtifolia* (DC. Leg. Mem. p. 194. t. 29,) foliis ovatis obovatisve v. ovate lanceolatis acutis subpenninerviis uninerviisve ramulisque glabris, inflorescentia vix puberula umbellata, bracteis glabris oblongis convolutis pedicello brevioribus, calycibus glabris laciniis acutiusculis, legumine villoso.

Hottentots-holland and Stellenbosch mountains in many collections.

9. P. *leiocarpa* (Eckl. et Zeyh. Enum. p. 165,) appears to

differ from P. *myrtifolia* by its smooth pod, but I have not seen it.

Mountain pastures near Grootvadersbosch in Swellendam, *Ecklon and Zeyher.*

10. P. *latifolia* (sp. n.) foliis ovatis obovatisve mucronato-acutis rigidis uninerviis v. plurinerviis subpenninerviisque ramulisque molliter sublanatis demum glabratis, inflorescentia laxe umbellata villosissima, bracteis ovatis concavis pedicellum æquantibus, calycis molliter villosissimi laciniis lanceolatis acutiusculis.—Near P. *Thunbergii* and P. *myrtifolia*, but distinct from either. Leaves much shorter and broader than even in P. *myrtifolia.*

Cape Colony *Scholl! Burchell!* n. 8025.

11. P. *vestita* (DC. Prodr. 2. p. 122,) foliis ovatis orbiculatisve valde concavis intus plurinerviis concaviusculis glabris, extus ramulisque hirsuto-lanatis, bracteis latissimis, pedicellis abbreviatis, calycis hirsutissimi laciniis lanceolatis acutiusculis.

Hottentots-holland mountains; in many collections.

Sect. 2. *Aneisothea*, D.C. pro parte. E. Mey. *Xiphotheca*, Eckl. et Zeyh.—Calyx basi non intrusus. Carina breviter curvata, erostris, superne rotundata. Frutices sæpius sericeo-v. adpresse villosi.

12. P. *elliptica* (DC. Leg. Mem. p. 198. t. 13?) foliis sparsis ovatis ellipticisve calloso-submucronatis planis crassis uninerviis utrinque tenuiter appresso-villosis, floribus pedunculatis subcapitatis, calycis sericeo-pubescentis dentibus breviter ovato-triangularibus, legumine oblongo-lineari tenuiter pubescente.—*Ingenhoussia? verticillata* E. Mey.! Comm. p. 21.—This plant, of which I have not seen the corolla, has certainly the pod of a *Priestleya*, and not of an *Amphithalea*, and appears to me to agree with De Candolle's figure as to foliage and habit; as however E. Meyer considers it to be so different, I cannot but feel doubts as to the correctness of my reference.

Rocky places in the Dutoits-kloof Mountains, *Drège!*

13. P. *villosa* (DC. Prodr. 2. p. 122), foliis ovato- v.

oblongo-ellipticis acutis planis uninerviis utrinque dense et molliter subsericeo-villosis, floribus subsessilibus dense capitatis, bracteis exterioribus lanceolatis intimis setaceis, pedicellis calycibusque villosissimis, laciniis calycis lineari-setaceis tubo vix brevioribus longioribusve.—*Borbonia tomentosa* Linn.! (the same name also applied in his herbarium to *Amphithalea densa*), *Liparia villosa* Linn. *Xiphotheca villosa*, Eckl. et Zeyh.! Enum. p. 166. and probably also *Xipotheca tomentosa* Eckl. et Zeyh. l. c.

Table and Devil's Mountains, Cape Town; in various collections.

14. P. *sericea* (E. Mey.! Comm. p. 19. vix DC.) ramis flexuosis patentim pilosis, foliis ovatis lanceolatisve utrinque subsericeo-villosis acutis uninerviis patentibus reflexisve, floribus subcapitatis subsessilibus, bracteis interioribus setaceis, calycibus molliter villosis, laciniis lineari-subulatis tubo longioribus.—*Liparia sericea* is not in Linnæus's herbarium, but this plant agrees well with his and Thunberg's characters, it is also *Xipotheca sericea* Eckl. et Zeyh.! Enum. p. 167. But the *Borbonia sericea* Lam. Dict. 1. p. 438. and *Priestleya sericea* DC. Prodr. 2. p. 122. appear to me to be rather the *Amphithalea densa*. *Priestleya lanceolata* E. Mey. Linnæa 7. p. 150 (*Xipotheca lanceolata* Eckl. et Zeyh. Enum. p. 167) which I have not seen, is probably referable to the present species.

Sandy and stony hills, Cape district, not uncommon.

15. P. *tecta* (DC. Prodr. 2. p. 122) foliis lato-ovatis acutis concavis utrinque subtus præsertim ramisque villosis, floribus axillaribus brevissime pedicellatis, calycibus, tomentosis, laciniis lanceolatis tubo æquilongis.—*Liparia tecta* Thunb. Fl. Cap. p. 568. *Xiphotheca rotundifolia* and *X. polycarpa* Eckl. et Zeyh. Enum. p. 166 (from their descriptions), and consequently, *Priestleya rotundifolia* Walp. Linnæa 13. p 469.

Hottentots-holland, Stellenbosch Mountains, Paarlberg, Piquetberg, etc. *Drège!*; and in a few other collections but does not occur frequently.

VII. AMPHITHALEA *Eckl. et Zeyh. excl. sp. Priestleyæ sp. DC. Ingenhoussiæ sp. E. Mey. Cryphiantha, Eckl. et Zeyh. Epistemium Walp.*

This very natural genus includes two species common about the Cape, and known to Linnæus and other older authors, who associated them either with *Indigofera* or *Borbonia.* De Candolle, who mistook one of them for the *Liparia sericea* of Linnæus joined them with *Priestleya,* from which Ecklon and Zeyher and E. Meyer again separated them, the former under the name of *Amphithalea* and the latter under that of *Ingenhoussia.* In both of these works, however, the genus includes several monadelphous and diadelphous species, the one giving as the generic character "Stamina diadelpha (9 et 1);" the other, "Stamina submonadelpha, decimum uno latere reliquis ima basi junctum." It will be found, however, on examination, that some species are entirely diadelphous, as in *Priestleya,* and others have all the stamens nearly equally connected, though often very shortly so. As the latter have also some constant differences in habit, and especially in the leaves, which are always more or less involute, not revolute, I have adopted for them the genus *Coelidium,* well indicated by Vogel, and published by Walpers.

Ecklon and Zeyher had separated from *Amphithalea,* under the name of *Cryphiantha,* a species to which rather broader leaves and small flowers give a little difference in habit, but none, that I can perceive, in character, and I have therefore followed Meyer and Walpers in retaining it as a species of *Amphithalea.* The A. *cuneifolia* Eckl. et Zeyh. has also been established as a genus by Walpers, and has, it is true, a longer pod, and usually four ovules, but (if, as I have little doubt, I am not mistaken in the identity of the plant) it has precisely the habit of *Amphithalea,* and although the ovules in the genus are usually solitary, yet there are two in A. *densa,* and as to the character from which the name is derived, the tenth stamen being inserted on the claw of the vexillum, it must have originated in a mistake; probably in pulling off the vexillum, as frequently may happen in dissecting a young flower, a portion of the disk with the tenth stamen adhered to the claw. The insertion of the stamens on the corolla has not, to my knowledge, been observed in any Leguminosæ, and if it were to happen, it is not probable that it would be limited to the upper stamen only, which belongs to the inner series of stamens.*

* *Ovario 2-4-ovulato.*

1. A. *cuneifolia,* (Eckl. et Zeyh. Enum. p. 167,) foliis obovato-orbiculatis mucronulatis obtusisve penninerviis utrinque ramulisque dense et appresse sericeo-incanis v. junioribus ferrugineis, floribus axillaribus confertis, legumine calyce duplo longiore oblongo-falcato acutiusculo compresso ferrugineo villoso 2-4-spermo.—*Priestleya axillaris,* E. Mey. Comm. p, 20 (ex descr.) non DC. *Epistemum ferrugineum,* Walp. Linnæa, 13. p. 473.

Hottentots-holland Mountains, *Mundt, Bowie ! Ecklon and Zeyher, Burchell !* n. 8162.

2. A. *densa,* (Eckl. et Zeyh ! Enum. p. 167), foliis obovatis ovatis ellipticisve acutis uninerviis penninerviisve utrinque ramulisque appresse sericeis, floribus subsessilibus in axillis superioribus solitariis confertisve supremis subcapitatis calycis sericeo-villosi laciniis subulatis tubo sublongioribus, ovario biovulato, legumine ovato acuminato. *Indigofera sericea,* Linn. Mant. p. 271 ? *Borbonia tormentosa,* Linn ! herb. (forma angustifolia,) *Crotalaria imbricata,* Linn ! herb. (forma latifolia) *Borbonia sericea* et B. *axillaris ?* Lam. Dict. 1 p. 438, *Priestleya sericea* et P. *axillaris ?* DC. Prodr. 2. p. 122. *Priestleya elliptica,* E. Mey. Linnæa, 7. p. 150 non DC. *Priestleya Meyeri,* Meissn. Lond. Journ. Bot. 2. p. 65.

Cape district from Devil's Mountain to Hottentots-holland in most collections.

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* In some species of *Adesmia,* where the claw of the vexillum adheres slightly to the filaments, it is only to the second on each side (which belong to the outer series), leaving the uppermost of all entirely free.

* * *Ovario uniovulato.*

3. A. *violacea*, ramulis alternis divergentibus rigidis demum denudatis, foliis divaricatis lanceolato-ovatis marginibus recurvis uninerviis utrinque cinereis ramulisque appresse sericeis, spicis terminalibus foliosis, floribus subsessilibus solitariis confertisve, calycis sericeo-villosi laciniis tubo dimidio brevioribus, legumine ovato tomentoso.—*Ingenhoussia violacea*, E. Mey.! Comm. p. 21. *Amphithalea densa, Meissn.?* in Lond. Journ. Bot. 2. p. 65, non Eckl. et Zeyh.

Outniqua Mountains, *Drège! Bowie! Burchell!* n. 7436.

4. A. *intermedia*, (Eckl. et Zeyh! Enum. p. 168), ramis tenuibus virgatis, foliis oblongis acutis subplanis obscure uninerviis utrinque ramulis calycibusque sericeis, floribus subsessilibus solitariis confertisve, calycis laciniis tubo brevioribus, legumine ovato acuto sericeo.—A. *humilis*, Eckl et Zeyh! l.c.—Very near A. *multiflora* but with rather more the habit of some varieties of A. *densa*.

Stony hills near Caledon and Swellendam, *Ecklon* and *Zeyher!* also *Bowie!* and *Burchell!* Cat. n. 5971 and 6667.

5. A. *multiflora*, (Eckl. et Zeyh! Enum. p. 168), ramulis virgatis erectisve sericeis, foliis incurvo-patentibus erectisve parvis oblongis lanceolatisve obtusis v. mucronatis utrinque sericeis margine revolutis, laciniis calycinis tubo brevioribus. —*Indigofera depressa*, Thunb? Fl. Cap. p. 596. *Priestleya ericæfolia*, var. β. DC. Leg. Mem. p. 196. t. 31. *Amphithalea densiflora* et A. *incurvifolia*, Eckl. et Zeyh.! l.c. Leaves shorter and broader than in A. *ericæfolia*.

Common on the flats and sides of hills about Cape Town.

6. A. *Vogelii*, (Walp. Linnæa, 7. p. 472), is unknown to me, and not sufficiently described to enable me to distinguish it from the preceding, except perhaps by narrower leaves.

7. A. *ericæfolia*, (Eckl. et Zeyh.! Enum. p. 169), ramulis erectis sericeis, foliis incurvo-patentibus erectisve lanceolatis

acutis margine valde revolutis junioribus utrinque sericeis, adultis supra glabris nitidis subtus incanis, laciniis calycinis tubo subbrevioribus, legumine ovato acuminato lanato demum turgido.—*Priestleya ericæfolia*, DC. Prodr. 2. p. 122. *Ingenhoussia ericæfolia*, E. Mey.! Comm. p. 21. *Amphithalea hilaris*. Eckl. et Zeyh.! Enum. p. 169.

Common on the flats and sides of hills about Cape Town.

8. A. *virgata*, (Eckl. et Zeyh.! Enum. p. 169), ramulis virgatis apice subsericeis, foliis incurvo-patentibus erectisve lineari-lanecolatis acutis subacerosisve margine valde revolutis supra glabris nitidis v. primum vix sericeis subtus incano-sericeis, laciniis calycinis tubo brevioribus, legumine ovato longiuscule acuminato vix turgido sericeo.—*Indigofera axillaris* E. Mey.! Linnæa, 7. p. 166.—*Amphithalea Kraussiana*, Meissn.? Lond. Journ. Bot. 2. p. 65.—My specimens agree precisely with Meissner's description even as to the size of the flowers, although I have often seen them quite as large in A. *ericæfolia*. In A. *multiflora*, they are usually much smaller.

Strong sandy situations on the sides of hills at the mouth of the Klyn River, *Ecklon* and *Zeyher!*

9. A. *phylicoides*, (Eckl. et Zeyh.! Enum. p. 170), ramosissima, ramulis lanatis, foliis brevibus ovato-lanceolatis calloso-mucronatis obtusisve margine revolutis supra pubescenti-sericeis v. demum subnitidis, subtus cano-villosis, calycis cano-tomentosi dentibus valde inæqualibus tubo brevioribus.—Flowers small.

Vanstaadens river hills, *Ecklon* and *Zeyher!* n. 820 of *Zeyher's* Uitenhage collection.

10. A. *micrantha*. (Walpers, Linnæa, 13, p. 471), ramulis pubescentibus, foliis ovatis v. late subcordato-ovatis acutis planis concavisve supra glaberrimis nitidis subtus pilosis glabratisve uninerveis, calycis glabri dentibus brevibus obtusis.—*Ingenhoussia micrantha*, E. Mey.! Comm. p. 21.—*Cryphiantha imbricata*, Eckl. et Zeyh.! Enum. p. 172.

Mountains of Von Staaden's River, Uitenhage, *Ecklon and Zeyher !*, in the great Zwartebergen, *Drège !*, also in Bowie's collection.

VIII. LATHRIOGYNE *Eckl. et Zeyher.*

1. L. *parvifolia*, (Eckl. et Zeyh.! Enum. p. 170).—*Heudusa decipiens*, E. Mey! Comm. p. 153.—A small shrub with the habit of *Amphithalea*; but differing in its small yellow corolla with a rostrate keel almost entirely concealed in the very hairy calyx.

Hottentots-holland mountains *Ecklon and Zeyher !*, Zwartebergen, *Drège !*.

L. *candicans* Eckl. and Zeyh. Enum. p. 171, from the Table Mountain, is unknown to me, but is most probably some form of *Amphithalea densa*.

IX. COELIDIUM, *Vogel.*

Calycis laciniæ parum inæquales. Carina oblonga, obtusa, petalis lateraliter obtuse appendiculatis. Stamina omnia (sæpius breviter) connata. Legumen ovatum, monospermum. —Fructiculi ramosissimi. Folia margine plus minus involuta, supra adpresse pubescentia, subtus sæpius glabriuscula, sæpius tortilia v. transverse rugosa. Flores in axillis supremis gemini, subcapitati, ramulo excurrente demum sæpius laterales.—A very natural genus indicated by Vogel in the Berlin herbarium, and published by Walpers, but without any details.

1. C. *bullatum*, (sp. n.) foliis lato-ovatis bullato-concavis margine valde involuto subclausis acutiusculis intus appresse sericeis apice subbarbatis extus laxe pilosis, calycis sericeo-pilosi laciniis tubo longioribus, staminibus breviter monadelphis.—Ramuli molliter pilosi. Folia 3-4 lin. longa. Bracteolæ subulatæ. Calyx fere 3 lin. longus, laciniis anguste lanceolatis. Corollam non vidi. Filamenta post anthesin persistentia ad quartam fere partem connata.

Legumen oblique ovatum, breviter acuminatum, compressum, villosissimum, calycem vix superans.

S. Africa *Burchell !* Cat. Geogr. n. 7115.

2. C. *ciliare* (Vog. ex Walp. Linnæa 13. p. 472) foliis anguste lanceolatis involutis acutis rectis intus hirsutis apice subbarbatis subtus glabris nitidis rugulosis, floralibus latioribus, calycis glabriusculi laciniis setaceo-acuminatis subbarbatis carina multo brevioribus, staminibus alte monadelphis petalisque breviter perigynis.—*Amphithalea ciliaris* Eckl. et Zeyh.! Enum. p. 169.—*Ingenhoussia rugosa,* E. Mey! Comm. p. 22.

Stony hills, Klein Drakenstein *Drège !;* on the Klyn River hills, and along the River Zonder Einde, *Ecklon and Zeyher !*, also in *Bowie's* collection.

3. C. *roseum,* foliis ovato-lanceolatis lanceolatisve acutis tortilibus utrinque caulibusque molliter sericeo-villosis, floralibus brevibus (ovatis ?), calycis sericeo-villosi laciniis acutiusculis, staminibus alte monadelphis.—*Ingenhoussia rosea,* E. Mey! Comm. p. 153.

Dutoitskloof and Winterhoeksberg, on the borders of the Stellenbosch district *Drège !* It is also indicated in the Van Staaden's River hills in Uitenhage; but I have not seen the specimens gathered there.

4. C. *Bowiei,* (sp. n.) foliis lanceolatis involutis acutis tortilibus intus tomentosis subtus glabris nitidis subrugosis, floralibus latioribus, calycis glabri v. vix margine puberuli dentibus acutissimis carinam æquantibus v. superantibus, staminibus brevissime monadelphis petalisque breviter perigynis.—Habitu C. *Vogelii* affine, foliis C. *ciliari.* Ramuli breves tomento tenui mox evanido canescentes. Folia 3-5 lin. longa, divaricata, fere pungentia, floralia basi dilatata, calyces subsuperantia. Bracteæ setaceæ, calyce dimidio breviores. Flores sessiles quàm in C. *Vogelii* parum minores. Stamina fere ad insertionem libera. Discus staminifer longius adnatus quàm in C. *ciliari,* brevius quàm in C. *Vogelii.*

In *Bowie's* collection.

5. C. *Vogelii* (Walp. Linnæa, 13. p. 472.) humile, divaricato-ramosum, foliis lanceolatis margine incurvatis tortilibus supra tomentosis subtus demum glabris nitidulis, floralibus subconformibus, calycis canescentis subsericei dentibus acutis, staminibus brevissime monadelphis petalisque breviter perigynis.—*Ingenhoussia tortilis.* E. Mey! Comm. p. 22.

Dutoitskloof mountains *Drège!;* also, a narrow-leaved form, in *Burchell's* collection, n. 6687.

6. C. *muraltioides*, (sp. n.) ramulis rigidis tomentosis, foliis lineari-lanceolatis v. infimis breviter lanceolatis involuto-subteretibus supra tomentoso-villosis subtus pubescentibus obscure uninerviis, floralibus late-ovatis acutis uninerviis, calycis pubescentis dentibus obtusis, staminibus brevissime monadelphis petalisque alte perigynis.

Pinaarskloof, *Burke!*

7? *Ingenhoussia spinosa*, (E. Mey. Comm. p. 22., which I have not seen, is probably another species of *Coelidium*, but very different from any of the preceding in inflorescence, the peduncles being said to be capillary and much longer than the leaves.

Between Hex river and Draai, in the Tulbagh district, *Drège.*

Subtribe 2. GENISTEÆ.

Folia simplicia v. palmatim tri-pluri-foliolata. Alæ transverse plicatæ. Stamina omnia in tubum integrum v. postice fissum connata. Ovarium bi-v. pluri-ovulatum. Legumen inarticulatum.—Herbæ, frutices v. rarissime arbores. Caules non volubiles, rarissime flexuoso-subscandentes. Stipulæ inter se et a petiolo liberæ v. (in *Lupino* solo) petiolo adnatæ, foliaceæ, setaceæ, v. obsoletæ, nec scariosæ, nec infra insertionem productæ. Inflorescentia in plerisque racemosa, terminalis, racemis elongatione caulis ante v. post anthesin sæpe oppositi foliis, in generibus nonnullis Australasicis, paucissimisque speciebus tropicis axillaris. Pedicelli secus

rhachin racemi solitarii, bractea subtensi et sub calyce sæpissime bibracteolati. Antheræ sæpius biformes, 5 oblongæ adnatæ, 5 breviores versatiles, in paucis generibus omnes subconformes. Legumen bivalve, v. rarius (in *Viborgia* paucisque speciebus aliorum generum) indehiscens.

The simple-leaved genera and species of this subtribe are probably in most cases phyllodineous, the leaves being sessile, or nearly so, not articulate at the end of a petiole. The only exceptions I am aware of, occur in a few European species, in *Lupinus villosus*, and in *Crotalaria unifoliolata,* where the form of the leaflet is very different from what is observed, when a pinnate leaf is reduced to the terminal leaflet. Where there are several leaflets, they universally proceed all from the extremity of the petiole, at least, I have never seen in the most luxuriant specimens, any tendency in the leaf to assume the pinnate form.

The small transverse folds or wrinkles, between the veins of the wings of the corolla, are more or less conspicuous in all the *Genisteæ* I have examined. They do not appear to have, till lately, attracted much attention, nor is their physiological origin or function explained; but the constancy of their presence or absence in certain Papilionaceous tribes or genera is remarkable. Guillemin, in separating *Chrysocalyx* from *Crotalaria,* considered them as characteristic of his new genus, since then, however, their frequency among *Genisteæ,* has been alluded to by several botanists, and Koch is perhaps the first who gave them as a character of the subtribe, as modified by him, to the exclusion of *Ononis* and *Anthyllis.* Schleiden and Vogel, in their admirable paper on the development of the flowers of Leguminosæ, (Nov. Act. Acad. Nat. Cur. v. 19. part. 1. p. 65.) have carefully described their structure, and given a list of several genera, where they have observed them. I am not as yet prepared to state how far this character may be made use of in the distinction of other tribes of Leguminosæ; but it appears an absolute one, as between *Genisteæ* and *Trifolieæ.* The same folds exist in most, if not in all, *Podalyrieæ;* in *Tephrosia* and several other *Galegeæ*, (but not in all genera of that tribe;) in *Æschynomene*, and other pinnate-leaved *Hedysareæ*, (but not in several of the trifoliate genera;) and in many *Dalbergieæ*. I have seen no trace of them in *Trifolieæ*, in *Vicieæ*, nor in *Phaseoleæ*, with the exception of a few *Rhynchosioid* genera, and, as observed by Vogel and Schleiden, they appear to be absolutely confined to *Papilionaceæ*, no trace of them existing either in *Cæsalpinieæ* or in *Mimoseæ*.

Amongst the genera enumerated by Endlicher as belonging to *Genisteæ*, I should propose to exclude the following:

Liparia, Priestleya, Amphithalea, Lathriogyne, Heudusa, Coelidium and *Epistemum*, forming the preceding subtribe of *Liparieæ*.

Hallia, which appears to me to be a *Hedysareous* genus, with the fruit reduced to a single article. Amongst many other minor points, it may be sufficient to advert to the brown scariose stipules, the foliage, the single ovulum, and especially the indehiscent thin pod, with the peculiar reticulation of the *Hedysareæ*.

Requienia is too closely allied to *Psoralea plicata* to be removed far from that genus, and the articulation of the leaf at the extremity of the (very short) petiole, combined with its form and venation, show its analogy rather with the terminal leaflet of a pinnate leaf, than with a single leaflet of a palmate one. The uniovulate ovarium will serve to exclude it technically from the *Genisteæ*.

Ononis and *Anthyllis* with pinnate, (not palmate) leaves, and smooth alæ have been established by Koch, as a distinct subtribe. Perhaps they should rather be associated with *Trifolieæ*.

Goodia has also pinnate (though trifoliolate) leaves, and is therefore not a true *Genistea*. Its wings, however, have very evident folds, and the stamens are truly monadelphous, and its real affinities are therefore as yet doubtful.

The seven or eight Australian simple leaved *Genisteous* genera, though not separable from the subtribe, form notwithstanding a little group distinguished by a peculiar habit which brings them near to the Australian *Podalyrieæ*. They have also a truly axillary inflorescence, whilst that of most other *Genisteæ* is terminal, becoming frequently sooner or later leaf-opposed. But *Heylandia*, and two or three *Crotalariæ* and *Lotononides*, form an exception, which precludes the making use of this circumstance as a distinctive character.

The following are the most prominent characters of such of the *Genisteous* genera, as come within the scope of the present paper.

* *Folia constanter simplicia.*

Borbonia. Calyx æqualiter 5-fidus, laciniis acutissimis v. pungentibus. Vexillum villosum. Legumen lineare, compressum. Folia rigida, plurinervia. Species omnes Capenses.

Rafnia. Calycis quinquefidi lacinia infima angustior. Legumen lanceolatum v. lineare, sutura superiore subalata. Corolla uti tota planta glabra. Folia uninervia, reticulato-pennivenia. Species omnes Capenses.

Euchlora. Calyx *Rafniæ*. Carina obtusa. Legumen ovatum, turgidum. Herba humilis, hirsuta, Capensis, inflorescentia terminali.

Heylandia. Inflorescentia axillaris. Carina acute rostrata. Legumen lenticulare. Herba Indica.

* * *Folia simplicia v. palmatim composita.*

Lupinus. Carina rostrata. Legumen compressum, valvulis crassis, intus sæpe cellulosum. Stipulæ sæpius petiolo adnatæ.

Crotalaria. Carina rostrata. Legumen (etiam junius) turgidum, intus nudum. Stipulæ liberæ.

Priotropis. Omnia *Crotalariæ*, nisi? Legumen planum, valvulis membranaceo-chartaceis. Species unica, Indica.

* * * *Folia constanter palmatim composita* (v. *in* Lebeckiis *perpaucis articulatione evanida subulato-simplicia.*)

Lotononis. Calycis laciniæ laterales ab infima liberæ, cum

superioribus inter se liberis utrinque plus minus coalitæ, rarius omnes subæquales. Carina obtusa v. in speciebus paucis a *Crotalaria* legumine distinctissimis acute subrostrata. Legumen junius compressum, demum (præsertim in speciebus paucis a *Crotalaria* carina distinctissimis) plus minus turgidum.—Stipulæ sæpe solitariæ.

Listia. Omnia *Lotononidis,* nisi Legumen lineare compressum, de lateribus flexuosoan-fractuosum. Herba Copensia.

Rothia. Calycis laciniæ subæquales. Petala carinalia subsoluta. Legumen lineare rectum valvulis membranaceis sutura tantum carinali dehiscentibus. Herba Indica.

Xerocarpus. Omnia *Rothiæ,* nisi Legumen falcatum, acutissimum. Herba Africana.

Argyrolobium. Calycis campanulati laciniæ supremæ inter se, laterales cum infima plus minus in labia duo profunde distincta coalitæ. Vexillum amplum, carinam superans. Legumen lineare, compressum, sericeum, eglandulosum. Flores plus minus pedicellati.

Melolobium. Calyx tubulosus breviter bilabiatus. Corolla parva. Carina obtusa. Legumen lineare, compressum, subtorulosum, sæpissime glandulosum. Stipulæ semi-cordatæ. Flores sessiles. Species omnes Austro Africanæ.

Dichilus. Calyx fere *Argyrolobii.* Carina obtusa, vexillo sublongior. Legumen lineare, compressum, subtorulosum. Species omnes Austro-Africanæ.

Hypocalyptus. Calyx laxe campanulatus, breviter 5-dentatus, basi demum intrusus. Vexillum carinam rostratam superans. Legumen lineare, planum, sutura superiore incrassata. Species Capensis.

Loddigesia. Calyx *Hypocalypti.* Vexillum carina et alis multo brevius. Legumen ovato-lanceolatum, utrinque acutum, planum, sutura superiore incrassata. Species Capensis.

Lebeckia. Calyx obliquus breviter 5-dentatus, rarius 5-fidus subæqualis. Carina obtusa v. rostrata, alas et sæpius vexillum superans. Legumen lineare, planum teres v. turgidum. Species omnes Austro-Africanæ.

Viborgia. Calyx obliquus breviter 5-dentatus. Petala longe unguiculata. Legumen stipitatum, ovatum v. rarius oblongum, indehiscens, sutura superiore alata, inferiore tenui. Species omnes Austro-Africanæ.

**** *Folia palmatim composita, sæpius petiolo subnullo folia simplicia fasciculata mentientia.*

Aspalathus. Calyx 5-dentatus v. 5-fidus. Carina incurva v. rostrata vexillo brevior. Legumen obliquum, compressum, acutum, sæpius vix latitudine longius, rarius oblique lanceolatum. Species omnes Austro-Africanæ.

X. BORBONIA, *Linn.*

This genus remains untouched, as limited by Willdenow and De Candolle, for Sprengel's association with it of De Candolle's *Requienia,* is too absurd for discussion. It is a very natural group, readily known by the many-nerved leaves, independently of the characters derived from the flowers.

* *Carina brevius rostrata alæque villosæ.*

1. B. *barbata* (Lam.—DC. Prodr. 2. p. 120.) caule humili glabro v. vix piloso, foliis lanceolatis basi dilatatis subcordatis multinerviis barbato-ciliatis, pedunculis 1-2-floris brevissimis.—Nervi foliorum 7-15.

Table mountain, *Harvey !* and others.

2. B. *lanceolata* (Linn ! Spec. p. 994.) glabra, foliis lanceolatis linearibusve sub 5-nerviis, pedunculis 1-2-floris calyce brevioribus.—B. *angustifolia,* Lam. Dict. 1. p. 436. B. *trinervia,* Auct. recent. non. Linn. B. *decipiens* E. Mey. ! Comm. p. 15.—Nervi foliorum sæpissime 5 rarius 7 rarissime 3 tantum vidi.—The B. *trinervia* of Linnæus, which has been supposed to refer to some of the narrower leaved forms of this variable species, was in fact described from an imperfect specimen of *Cliffortia ruscifolia,* as noted by Dryander, in the Cliffortian herbarium, from an observation made many years since by Brown.

Common from the neighbourhood of Cape-Town to the Uitenhage district eastward, and to the Camiesbergen northward. *Drège! Ecklon and Zeyher! Harvey! Burchell!* n. 495 and 4478, etc.

3. B. *cordata*, (Linn.! Spec. p. 994.) caule humili villosissimo, foliis cordato-ovatis acuminato-pungentibus multinerviis glabris, floribus subsessilibus, calycibus basi villosis.

Mountains near Cape-Town, *Drège! Sieber!* n. 157, *Burchell!* n. 37,285, and 8281, and many others.

*** *Carina longius rostrata alæque glabræ.*

4. B. *monosperma*, (DC. Prodr. 2. p. 120) foliis oblongo-lanceolatis trinerviis cauleque glabris v. vix pilosis, pedunculis unifloris flore parvo longioribus calycibusque pilosis, legumine ovato-oblongo acuto 1-2-spermo.—Folia supra enervia, subtus in hac sola specie constanter trinervia observavi, nervis inter se distantibus. Ovarium biovulatum.

Cape Colony, *Bowie!*

5. B. *pungens*, (Mundt. in Herb. Hook.) foliis lineari-lanceolatis 3-5-nerviis, pedunculis filiformibus folia subæquantibus glabris sub flore parvo 2-3-bracteolatis, legumine oblongo-lineari acuto pleiospermo.—B. *monosperma*, E. Mey! Comm. p. 15, non DC.—Folia sæpius trinervia, nervis approximatis.

Mountains of the lower Southern Region, *Drège!* in grassy subalpine places near Gauritz Hoogte, *Mundt!* also in *Bowie's* collection.

6. B. *alpestris* (sp. n.), glabra, ramulis vix angulatis, foliis ovato-cordatis mucronato-pungentibus integerrimis multinerviis, pedunculis 2-3-floris calyce longioribus.—Fruticulus divaricato-ramosus, ramulis brevibus tenuibus. Folia 4 lin. v. rarius 6 lin. longa, 2 lin. lata, supra enervia, subtus 7-9-nervia, inter nervos avenia. Flores non vidi. Pedunculi fructiferi 3-4 lin longi, tenues, versus apicem in pedicellos 2-3 breves divisi. Bracteolæ sub calyce striatæ. Calycis tubus 1½ lin. longus, laciniæ angustæ, setaceo-pungentes, tubo æquilongæ. Legumen fere pollicare, 2 lin. latum, acutum, glabrum.

In subalpine bushy places near Kochman's Kloof, *Mundt!*

7. B. *parviflora*, (Lam. Dict. 1. p. 437.) glabra, ramulis angulatis subalatisve, foliis late cordato-ovatis acuminato-pungentibus minute denticulato-ciliatis 7-11-nerviis inter nervos vix obscure venosis, pedunculis confertim 4-6-floris calyce brevioribus, calycis laciniis tubo longioribus.—B. *ruscifolia*, Sims. Bot. Mag. t. 2128.—E. Mey! Comm. p. 16.—B. *ruscifolia* et B. *parviflora*, Eckl. et Zeyh! Enum. p. 163. —B. *alata*, Willd. in Spr. Syst. 2. p. 185—Folia 6-12 lin. longa vix unquam semi-pollice latiora, utrinque nervosa.

Mountains of Cape and Stellenbosch districts, *Drège! Ecklon and Zeyher! Harvey! Sieber!* n. 168, *Burchell!* n. 7818 and 7990, and others.

8. B. *latifolia* (sp. n.,) ramulis angulato-subalatis, foliis orbiculatis mucronulatis basi cordatis integerrimis v. margine asperis 11-15-nerviis inter nervos obsolete venosis, pedunculis brevissimis multifloris.—Specimen fructiferum. Folia pollicem longa et lata, concava, utrinque nervosa. Pedunculi brevissimi, 8-12-flori. Pedicelli rigidi, 2-3 lin. longi. Flores non vidi. Legumina 8-9 lin. longa, 3 lin. lata, glabra, coriacea, reticulata.

Cape Colony, *Burchell!* n. 8087.

9. B. *complicata*, ramulis teretibus glabris, foliis amplexicaulibus late cordato-ovatis acuminato-pungentibus integerrimis multinerviis inter nervos crebre et tenuiter reticulato-venosis, racemis multifloris folio brevioribus, calycis dentibus tubo subbrevioribus.—B. *parviflora*, E. Mey! Comm. p. 16 non Lam.

Along rivulets on the Piquetberg, *Drège!*

10. B. *crenata*, (Linn. Spec. p. 994) ramulis subteretibus glabris pilosulisve, foliis orbiculatis profunde cordatis mucronatis ciliato-denticulatis multinerviis reticulatis, pedunculis laxe plurifloris calycibusque pilosis, laciniis calycinis acutis tubo brevioribus.

On shaded rocks in the Winterhoeck and Dutoits-kloof mountains, *Drège!* in peat soil amongst shrubs on the mountains near Brackfontein, *Ecklon and Zeyher!*

11. B. *undulata*, (Thunb. Prodr. Fl. Cap. p. 122) ramulis

subteretibus glabris pilosulisve, foliis profunde cordatis orbiculatis undulatis complicatis apice reflexo-mucronatis piloso-ciliatis multinerviis reticulatis, pedunculis 1-3-floris pilosis, laciniis calycinis angustissimis tubo longioribus.—*Crotalaria perforata,* Linn! Herb. *Borbonia perforata,* E. Mey! Comm. p. 16. non Thunb, *B. ciliata,* Willd. Spec. 3. p. 923 et DC. Prodr. 2. p. 120 ex parte, B. *Candolleana,* Eckl. et Zeyh.! Enum. p. 163. B. *commutata,* Vog. Linnæa, 10. p. 596.—Auriculæ foliorum pone caulem etsi sæpe incumbentes, constanter liberæ.

Among shrubs and tall grass, and on shady rocks, Dutoits-kloof, *Drège!* Tulbagh, *Ecklon and Zeyher!* and in other collections.

12. B. *perforata,* (Thunb. Prodr. Fl. Cap. p. 122) caule decumbente subscandente, ramulis subteretibus glabris pilosisve, foliis perfoliatis undulatis obtusis v. vix recurvo-mucronatis multinerviis reticulatis margine ciliatis integerrimisve, pedunculis 1-2-floris folio brevioribus, laciniis calycinis tubo brevioribus.—B. *ciliata,* Willd. Herb. (ex Walpers,) Spec. 3. p. 923 et DC. Prodr. 2. p. 120 ex parte.—Auriculæ foliorum pone caulem connatæ. Flores minores quàm in B. *undulata.*

Near Grootvadersbosch in Swellendam *Mundt!* Campe Bay, *Harvey!* also *Burchell!* n. 418 and 8014.

XI. Rafnia, *Thunb.—Œdmannia, Thunb.—Vascoa DC.—Pelecynthis, E. Mey.*

This genus, taken as a whole, is so very natural a one, that I suggested (Ann. Mus. Vind. 2. p. 142) the reuniting with it *Vascoa* and *Pelecynthis,* which had been separated by De Candolle and E. Meyer. The same view had been taken by Walpers, (Linnæa, 13. p. 462) although he subsequently (Repert. 1. p. 579,) again separated *Pelecynthis.* A closer examination of the species shows that it may well be divided into four sections, by characters of nearly equal value, but scarcely of importance enough to break up into distinct

genera, so natural, and at the same time so small a group.

As a whole, the *Rafniæ* may be at once known among simple-leaved *Genisteæ* by their smooth surface, without any hairs in any part of the plant, often more or less glaucous, and turning black when dry, by their leaves not many-nerved from the base, as in *Borbonia,* and by the inflorescence which is never racemose as is *Crotalaria;* but the peduncles (except in the very few cases where they are simple and one-flowered) are more or less regularly dichotomous, with foliaceous bracteæ frequently opposite at their ramifications. In characters derived from the flower, *Rafnia* comes nearest to *Crotalaria;* but the pod is very different.

Sect. 1. *Vascoa,* DC. Carina rostrata. Folia lata amplexicaulia reticulato-venosissima. Legumen polyspermum.

1. R. *virens,* (E. Mey! Comm. p. 11,) foliis orbiculatis cordato-amplexicaulibus obtusissimis, calycis laciniis 4 superioribus acuminato-triangularibus tubo sublongioribus inter se parum inæqualibus.

Amongst rocks on the Dutoits-kloof mountains, *Drège!*

2. R. *amplexicaulis,* (Thunb. Fl. Cap. p. 563) foliis orbiculatis cordato-amplexicaulibus, obtusissimis, calycis laciniis 4 superioribus late triangularibus tubo brevioribus inter se parum inæqualibus.—*Vascoa amplexicaulis,* DC. Prodr. 2. p. 119.

Mountains of Cape and Stellenbosch districts; Paarlberg, Cederbergen and Giftberg, *Drège!* Tulbaghs-kloof, *Ecklon and Zeyher!* and other collections.

3. R. *perfoliata,* (E. Mey! Comm. p. 12. non Willd.), foliis ovato-orbiculatis apiculatis v. vix obtusis basi cordato-amplexicaulibus, calycis laciniis 2 supremis lateralibus latioribus late cultratis.—*Vascoa perfoliata,* DC. Prodr. 2. p. 119. V. *acuminata,* E. Mey. Linnæa 7. p. 148.

Rocks in Cape and Stellenbosch districts; Kockman's-kloof, *Mundt!* Tulbagh and Hottentot's-holland, *Ecklon and Zeyher!* Dutoits-kloof, Wupperthat and Waaihoek *Drège!* also *Burchell!* n. 7550 and other collections.

Sect. 2. *Eurafnia.—Rafnia,* E. Mey.—Calycis laciniæ supremæ lateralibus approximatæ. Carina rostrata. Legumen polyspermum. Folia non amplexicaulia, uninervia v. penninervia, obscure reticulato-venosa.

The species of this and the following section run much into one another in foliage, and each species varies much in aspect, according to the degree in which the inflorescence is developed; the most constant characters must be sought in the calyx and carina. In this respect the specimens, I have received from Drège do not always agree with the characters given to them by E. Meyer, perhaps from some confusion in sorting them for distribution. The synonymy of this part of the genus is therefore more than usually confused and doubtful.

4. R. *ovata,* (E. Mey! Comm. p. 12) caule subtereti, foliis late elliptico-ovatis acuminatis basi in petiolum angustatis, calycis laciniis 4 superioribus late triangularibus acuminatis infima setacea cæteris æquilonga, legumine stipitato late alato.

Among rocks on the Cederbergen, *Drège!*

5. R. *triflora,* (Thunb. Fl. Cap. p. 563) ramulis angulatis ancipitibusve, foliis orbiculatis obovatis ovatis v. ovato-lanceolatis basi rotundatis subcordatisve, pedunculis axillaribus 1-3-nis aphyllis v. irregulariter subramosis foliatis, calycis laciniis supremis late cultratis lateralibus lanceolatis æquilatis, infima setacea cæteris tuboque breviore, carina calyce vix duplo longiore leguminis ala angusta.—*Crotalaria triflora,* Linn. Herb.* *Rafnia alpina,* Eckl. et Zeyh. Enum. p. 160?

Hills about Cape Town, and northward to the Piquetberg, and towards Oliphant's River in Clanwilliam, *Drège* and others; *Burchell!* n. 388. Perhaps, also in Swellendam district, if the R. *triflora, β,* and R. *cordata,* of Ecklon and Zeyher belong to this species.

6. R. *fastigiata,* (Eckl. et Zeyh.! Enum. p. 160) ramulis angulatis, foliis ovatis ovato-lanceolatis v. oblongis basi cuneatis rotundatis subcordatisve divaricato-venulosis, pe-

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* The R. *lancea* and R. *opposita* are also in Linnæus's herbarium, under the name of *Crotalaria triflora.*

dunculis 1-3 axillaribus aphyllis v. irregulariter subramosis foliatis, calycis laciniis 4 superioribus late lanceolatis, infima setacea cæteris tuboque breviore, carina calyce subtriplo longiore, legumine vix alato.—Vix nisi calycibus minoribus à R. *triflora* differt.

Stony places on the high mountains near Puspas valley in Swellendam; *Ecklon and Zeyher !*, also *Burchell !* n. 7177.

7. R. *intermedia*, (Vogel, MSS. ex Walp. Linnæa 13. p. 463) ramulis subteretibus, foliis inferioribus obovatis superioribus oblongis obtusis recurvo-mucronulatis basi angustatis, venis infimis margine subparallelis, pedunculis elongatis unifloris, bracteis subflore oppositis foliaceis, calycis laciniis 2 supremis late ovato-cultratis, lateralibus lanceolatis dimidio angustioribus, infima setacea cæteris tuboque subæquilonga. —R. *erecta*, Eckl. et Zeyh! Enum. p. 160 non Thunb. and R. *retroflexa*, Eckl. et Zeyh. l. c. ex Walpers non Thunb. R. *cuneifolia*, (litt. b. et c.) E. Mey. Comm. p. 12? non Thunb.

Open grassy hills in Adow, and stony sides of the Vanstaadens River hills in Uitenhage, *Ecklon and Zeyher!* I have not seen Drège's specimens from the same locality, but E. Meyer's character agrees with this species. His letter *a* from a very different part of the colony, belongs to the section *Pelecynthis*, and appears to be the true R. *cuneifolia*.

8. R. *elliptica*, (Thunb?—Eckl. et Zeyh.! Enum. p. 160) ramulis angulatis, foliis oblongo-v. subovato-ellipticis acutis basi angustatis, venis infimis margine subparallelis, pedunculis in axillis 1-3 elongatis unifloris, bracteis subflore oblongis oppositis foliaceis, calycis laciniis 4 superioribus lanceolatis subulato-acuminatis, infima lanceolato-subulata concava cæteris tuboque longiore.

Stony sandy sides of mountains, near Pickeniers-kloof in Clanwilliam. *Ecklon and Zeyher.*

9. R. *lancea*, (DC. Prodr. 2. p. 119) ramulis subangulatis, foliis oblongis lanceolatisve, pedunculis axillaribus unifloris v. subdichotome-ramosis foliatis, calycis laciniis 4 superioribus lanceolatis subcultratis per anthesin plus minus connatis,

infima lineari-setacea cæteris parum breviore tubo longiore, legumine sessili lanceolato acuto.

Sandy plains in Cape and Stellenbosch districts, and mouth of the Klyn river, *Ecklon and Zeyher! Drège!* and others; *Burchell!* n. 3754 and 8178; also Sidbury, near Graham's Town in Albany, *Burke!*, a very distant locality, but the specimens are precisely similar to those from the neighbourhood of Cape-Town.

10. R. *angulata*, (Thunb. Fl. Cap. p. 564) ramulis angulatis, foliis oblongo-lanceolatis anguste cuneatis v. linearibus, ramulis floriferis subdichotomis foliatis, laciniis calycinis 4 superioribus lanceolatis parum inæquilatis, infima lineari-setacea cæteris subbreviore tubo parum longiore, legumine basi longe angustato stipitato.—R. *angustifolia*, et R. *filifolia*, Thunb. l. c., *Pelecynthis dichotoma*, E. Mey! ex specim. a cl. Drège accepto vix tamen Comm. p. 14.—A very variable species having sometimes the leaves much like those of R. *lancea*, and sometimes very narrow linear.

Very common in sandy hills, and sides of mountains in Cape and Stellenbosch districts from the Table Mountain to the Drakenstein and Hottentots-holland mountains, *Drège! Ecklon and Zeyher!* etc. *Burchell!* n. 228, 777 and 7588.

11. R. *humilis*, (Eckl. et Zeyh. Enum. p. 162), which with Walpers I should presume to be the same as R. *Ecklonis*, E. Mey. Comm. p. 12, (neither of which specimens have I seen) is said to differ from R. *angulata*, by the large obtuse upper divisions of the calyx.

Cape Flats, *Ecklon*, according to E. Meyer, near Constantia, *Ecklon and Zeyher*.

Sect. 3. *Pelecynthis*, E. Mey.—Calycis laciniæ supremæ a lateralibus sinu lata separatæ. Carina subfornicata late et oblique truncata v. utrinque emarginata. Legumen polyspermum. Folia *Eurafniæ*.

12. R. *opposita*, (Thunb. Fl. Cap. p. 564) foliis caulinis cuneato-oblongis sublanceolatisve acutis mucronatis basi angustatis, ramis floralibus subdichotomis foliatis, pedicellis

intra bracteas foliaceas solitariis, calycis laciniis lateralibus a supremis æquilatis remotis, infima angustissima æquilonga, carina late subrostrata emarginata, legumine stipitato.—*Crotalaria opposita*, Linn! Herb.* *Pelecynthis opposita*, E. Mey. Comm. p. 14.

Cape, Stellenbosch and Swellendam districts, *Ecklon and Zeyher!* also *Burchell!* n. 780 and 6892.

13. R. *axillaris*, (Thunb. Fl. Cap. p. 564?) ramis teretibus, ramulis floriferis dichotomis subancipitibus, foliis ovato-ellipticis oblongisve utrinque acutis nitidis venosis, pedicellis intra folia suprema brevissimis solitariis, laciniis calycinis superioribus lanceolato-triangularibus, inferiore subulata æquilonga, legumine subsessili basi breviter angustato lanceolato. —*Pelecynthis axillaris*, E. Mey. Comm. p. 14.

Near Cape Town, *Harvey!* and others; Hottentots-holland and Klyn River mountain, *Ecklon and Zeyher*.

14. R. *corymbosa* (Walp. Linnæa, 13. p. 484) ramulis subangulatis, foliis oblongo-ellipticis lanceolatisve nitidis nervosis basi angustatis, floribus ad apices ramulorum pluribus, pedunculis brevibus aphyllis, calycis laciniis superioribus brevibus late triangularibus infima subulata longiore..—*Pelecynthis corymbosa*, E. Mey! Comm. p. 14 et eo teste, *Rafnia spicata*, Thunb. Fl. Cap. p. 564 sed hoc synonymon mihi valde dubium videtur.—Species a R. *cuneifolia* parum differt, foliis angustioribus, carina tenuiore.

Paarlberg, *Drège!*

15. R. *cuneifolia*, (Thunb. Fl. Cap. p. 563) ramulis superne tereti-compressis v. subancipitibus, foliis obovatis v. superioribus ovato-rhombeis acutiusculis basi cuneatis nervosis, floribus ad apices ramulorum subcorymbosis, pedunculis brevibus aphyllis, calycis laciniis superioribus tubo æquilongis late triangularibus infima subulata longiore, carina apice late truncata.—*Crotalaria cuneiformis*, Lam. Dict. 2. p. 195, *Rafnia cuneifolia*, E. Mey. litt. *a* in Herb. meo vix

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* The Linnæan herbarium contains also under the same name two forms of R. *angulata*.

tamen Comm. p. 12 nec Eckl. et Zeyh. R. *racemosa*, Eckl. et Zeyh. Enum. p. 161 ?—The *Rafnia cuneifolia* of Thunberg is referred both by E. Meyer, and by Walpers to the section *Eurafnia;* but his detailed description of the calyx and corolla, although he does not state the form of the carina, shows plainly that it is a *Pelecynthis* he had in view, and my specimen so named in Drège's collection belongs certainly to this section. I presume it to be the same, also, as the one mentioned by Walpers as being named R. *cuneifolia* in Willdenow's herbarium.

In dry rocky mountainous situations, near Paarl and Dutoits-kloof, *Drège!*

16. R. *rhomboidea*, (Walp. Linnæa 13. p. 464) ramulis subteretibus, foliis ovato-rhombeis ellipticis oblongisve acutiusculis basi cuneatis uninerviis, venis inconspicuis, floribus ad apices ramorum 1-3, pedunculis brevibus aphyllis, calycis laciniis tubo æquilongis, superioribus triangularibus, infima subulata æquilonga, carina apice utrinque late emarginata.—*Pelecynthis rhomboidea*, E. Mey ! Comm. p. 14, R. *cuneifolia*, Eckl. et Zeyh. ! Enum. p. 161 non Thunb.—More branched and leaves smaller than in R. *cuneifolia.*

Sandy places amongst rocks, near Tulbagh, *Ecklon and Zeyher !*, Piquetberg, *Drège !*

Sect. 4. *Caminotropis.—Hybotropis et Caminotropis*, E. Mey. — Calyx *Pelecynthis.* Carina fornicata, obtusa. Ovarium biovulatum. Legumen longe stipitatum, 1-2 spermum.

17. R. *dichotoma*, (Eckl. et Zeyh. ! Enum. p. 161) ramulis floriferis dichotomis ancipitibus, foliis late ovatis oblongisve acutis obtusisve crassis enerviis, floribus intra folia ultima solitariis subsessilibus, calycis laciniis acuminatis tubo brevioribus, carina fornicata obtusa dorso subgibba.—*Pelecynthis gibba*, E. Mey. Comm. p. 14 teste Walpersio.

Mountains near Gnadendal, *Ecklon and Zeyher !* also *Burchell !* n. 7742.

18 R. *retroflexa*, (Thunb ? Fl. Cap. p. 565) ramulis filiformibus teretibus, foliis obovatis ovatisve alternis v. ultimis

oppositis, floribus ad apices ramulorum paucis pedicellatis parvis, calycis laciniis acutis tubo subbrevioribus, carina fornicata.—*Pelecynthis retroflexa*, E. Mey! Comm. p. 15.

Onder Bokkeveld? *Drège!*

19. R. *diffusa*, (Thunb. Fl. Cap. p. 565) ascendens, glaucescens, ramulis erectis tenuibus floriferis subdichotomis, foliis obovatis oblongisve basi angustatis enerviis v. obscure uninerviis floribus intra folia ultima subsolitariis, calycis laciniis tubo brevioribus.—*Pelecynthis diffusa*, E. Mey! Comm. p. 15.—Thunberg's synonyms referred to this and the preceding species, by E. Meyer, are very doubtful, owing to the insufficiency of his characters.

Onder Bokkeveld and Cedarbergen, *Drège!*

20. R. *pauciflora*, (Eckl. et Zeyh. Enum. p. 162) is unknown to me, but from his description of the pod I should refer it to this section. Walpers considers *Pelecynthis dichotoma* of E. Mey. as the same. My specimen so named in Drège's collection is the *Rafnia angulata*, belonging to *Eurafnia*, which induces me to suppose there has been some error in the distribution of the specimens.

Stony sides of the mountains of Tulbagh valley, *Ecklon and Zeyher*.

XII. Euchlora, *Eckl. et Zeyh.*—*Microtropis, E. Mey.*

1. E. *serpens*, (Eckl. et Zeyh.! Enum. p. 171).—*Ononis hirsuta*, Thunb. Fl. Cap. p. 584, *Crotalaria serpens*, E. Mey! Linnæa 7. p. 153, *Microtropis hirsuta*, E. Mey! Comm. p. 65.—A small plant with the calyx and foliage of *Rafnia*, the habit, the hairs, corolla and pod of *Lotononis*.

Sandy plains of Cape and Stellenbosch districts, *Ecklon and Zeyher! Drège! Thunberg!*

XIII. Heylandia, *DC.*

1. H. *latebrosa*, (DC. Leg. Mem. p. 201.)—H. *hebecarpa*, DC. l. c. p. 200 t. 34, et H. *leiocarpa*, DC. l. c. p. 200.—Wight and Arnott have correctly considered the three sup-

posed species of this genus as one. It is closely allied to *Crotalaria* in which Roxburgh had included it, but is easily known by its constantly axillary inflorescence, and small lenticular flat pod.

Common in open sunny pastures in Upper India, *Royle! Jaquemont! Edgeworth!* etc. in Hurdwar, *Wallich!* (Cat. n. 5342) in the Peninsula, *Russell! Heyne! Wight!* etc. Ceylon *Leschenault*.

XIV. LUPINUS, *Linn.—J. G. Agardh, Syn. Lupin.*

This genus, closely allied to *Crotalaria*, yet distinguished from all *Genisteæ* by the tendency of the stipules to adhere to the petiole, does not strictly belong to the geographical region now under consideration, and is only mentioned here for the purpose of adverting to two supposed South African, and one Asiatic species included in Agardh's excellent monography, although amongst species unknown to him.

L. *integrifolius*, (Linn. Spec. p. 1016 and Thunb. Fl. Cap. p. 589), appears to have been described from a specimen of Burmann's. Neither Thunberg nor any of the later botanists, who have been at the Cape have ever found it. The descriptions, moreover, both of Linnæus and Thunberg so exactly agree with the *Lupinus villosus* of North America, that I cannot help concluding that Desrousseaux was right in considering the latter as Linnæus's species, and that some mistake had occurred as to the country from whence Burmann had procured it. Willdenow, it is true, says of his L. *villosus*, "certe diversus a sequente" (L. *integrifolio*), but the only distinctions he gives, are the flowers blue in L. *integrifolius*, and "rubicundæ" in L. *villosus*, and the calyxes alternate in the former, semiverticillate in the latter. But according to Torrey and Gray (Fl. N. Amer. 1. p. 382) the L. *villosus* includes a variety with reddish purple and another with blue flowers, as indeed may be observed in several species of *Lupinus*, and the flowers of the N. American plant are so irregularly subverticillate, that they may be often quite as well described as alternate, or rather spiral.

L. *Cochinchinensis,* (Lonr. Fl. Cochinch. p. 429) has been already referred by Wight and Arnott, Fl. Penins. Ind. Or. 1. p. 187, to *Crotalaria retusa,* with which plant Loureiro's description agrees perfectly.

L. *africanus,* (Lour. l. c.) from the East Coast of Africa is certainly not a *Lupinus,* but his description is too short to guess at the plant he has so designated, at least, until the plants of that country are better known.

The annual Lupins either indigenous to, or extensively cultivated in the Mediterranean region, do not appear to extend far enough into the interior from the North Coast of Africa, or eastward into Asia, to be included in the present paper.

XV. CROTALARIA, *Linn. DC.—Chrysocalyx, Guillem. et Perrott.—Clavulium, Desv.*

A very extensive genus, having a very wide range in all warm climates, and constantly known by the beaked carina,* combined with the pod always turgid, even when young. A few Cape species belonging to the *Oliganthæ* come very near to some *Lotononides,* but even here the line is easily drawn, if all species where both characters are combined, are retained in *Crotalaria,* and all those of this set, where either the carina is blunt or the pod flat when young, are referred to *Lotononis.*

The genus has been divided by Endlicher, Gen. Pl. p. 1262 into five sections, (exclusive of *Priotropis* and *Amphinomia*), according to modifications of the pod, but the differences there given, are in most cases neither so well defined nor so conformable to habit as one would be led to suppose by examining a few species only of each section, nor have I been able to find any other positive character derived from the flower or fruit to break up this very natural genus into sections. I have therefore endeavoured, after Wight and Arnott, to arrange the species into groups only, characterised chiefly by the foliage and habit.

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* The carina in C. *purpurea* has a short and rather blunt beak; in all the other species I am acquainted with, it is sharply beaked.

As to the two last sections of Endlicher, *Priotropis* should perhaps be retained as a distinct genus, on account of the perfectly flat pod, though it be so exactly a *Crotalaria* in habit and every other character. *Amphinomia*, a name given by De Candolle to Thunberg's *Connarus decumbens* is too little known to be referred with certainty to any genus. The original specimen was received by Thunberg from Burmann, in whose own herbarium De Candolle does not find it, and no modern botanist has ever seen it. E. Meyer, Comm. p. 154, suspects it to be the *Crotalaria oxyptera*, E. Mey. described below under *Lotononis*, and he may be right if Thunberg has drawn his description of the petals from some totally different plant, or from his own imagination. But this point can only be cleared up by an inspection of Thunberg's own herbarium, if the specimen exists there; if not, the genus should be entirely omitted as a blunder not now to be cleared up.

Series 1. SIMPLICIFOLIÆ, *Folia simplicia, sessilia, nec in petiolo articulata.*

§ 1. *Arenariæ.* Suffrutices v. herbæ rigidæ, prostratæ v. divaricato-ramosissimæ, pauci-foliatæ. Pedunculi terminales v. demum oppositifolii, remoti-flori, deflorati sæpe spinescentes. Legumen ovoideum v. globosum, sessile, sæpius pubescens.—Species omnes hic enumeratæ.

1. C. *Ægyptiaca*, (sp. n.) rigida, ramosissma, subspinescens, ramulis tomento brevi canescentibus v. glabris, foliis raris ovatis oblongisve undulatis calycibusque tomentoso-pubescentibus, ovario 2-3-ovulato, legumine ovoideo calyce 2-3-plo longiore glabro v. juniore minute tomentello.—Rami breves, juncei, sæpe fere aphylli.

Lower Egypt.* Desert of Suez almost buried in the sand, *Bové!* n. 184; Desert of the Sinai, *Bové!* n. 521, *S. Fischer!*

2. C. *Thebaica*, (DC. Prodr. 2. p. 128) prostrata, spinescens,

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* Although not strictly within the Indo-African region, I have included this species in order to give a complete Enumeration of the *Crotalariæ* of the old World.

ramulis pilis brevibus patentibus villosis, foliis ovatis rarius oblongis undulatis calycibusque villosis, ovario 2-3-ovulato, legumine calyce dimidio longiore subgloboso pubescente.—Pedunculi sæpius 2-3-flori. Ovula sæpissime 2 cum tertio minore abortiente.

Upper and Lower Egypt. Sands of the province of Sennaar, *Kotschy!* Pl. Nub. n. 343, along roads about Thebes and in the Island of Philos, *Delile*, Lower Egypt, *Kotscky!* n. 902, Tentyra, *Sieber!* Kingdom of Mascate, *Aucher-Eloy* n. 4354 and 4464.

3. C. *arenaria*, prostrata, subspinescens, ramulis pilis patenti-reflexis dense villosis, foliis ovatis oblongisve undulatis calycibusque villosissimis, ovario 8-10-ovulato, legumine calyce duplo longiore ovoideo villosissimo—C. *Thebaica*, Guill. et Perrott! Fl. Seneg. 1. p. 160 non DC.—Pedunculi pluriflori. Facile a præcedente ovario distinguitur.

Western tropical Africa. Very frequent in the dry sandy regions of Walo, at Cape Verd, etc. *Leprieur and Perrottet! Heudelot!*

4. C. *Burhia*, (Hamilt.! in Wall. Cat. n. 5386) divaricato-ramosissima, vix spinescens, ramulis sericeo-pubescentibus, foliis oblongis adpresse pilosis, calycibus villosissimis, ovario 4-6-ovulato, legumine ovoideo villosissmo.—Stirps C. *Thebaicæ* affinis, arida, paucifoliata, sed altior, ramulis longioribus. Pedunculi elongati, sæpius multiflori. Ovula sæpissime 4 vidi, quinto v. rarius sexto minore abortiente.

Western India. Dry sandy places on the banks of the Jumna, *Hamilton!* between Delhi and Khurnaul, *Royle!* between Saintol and Ranjee, *Jaquemont!* Balawali in Loodihana, *Edgeworth!*

§ 2. *Diffusæ*. Herbæ plus minus villosæ. Caules prostrati, sæpe filiformes. Folia disticha, sæpe valde dissimilia, ex ovato lanceolata. Stipulæ parvæ v. nullæ, nec decurrentes. Pedunculi per anthesin oppositifolii, 1-2-rarius pluriflori Flores (nisi in C. *bifaria* et C. *multiflora*) parvi.—Species omnes hic enumeratæ.

The plants of this group have the habit of the smaller *Alatæ*,

but the stipules are never decurrent, not even those belonging to the leaf opposed to the peduncle. They also have sometimes the general appearance of some *Calycinæ*, but in the latter group the racemes are terminal, or only become lateral by the elongation of the branch when the flowering is considerably advanced, whilst in the *Diffusæ* the peduncles are already leaf-opposed, when the flowers begin to expand.

* *Legumine hirto subgloboso.*

5. C. *biflora*, (Linn!—W. et Arn.! Prodr. 1. p. 190.)—Wall. Cat. n. 5417, A. B. exparte, C. D.

East Indian Peninsula. Shady pasture ground, about hedges, etc. *Roxburgh*, *Russell !*, *Heyne !*, *Wight !*,

6. C. *globosa*, (Wight.! in Wall. Cat. n. 5412).—W. et Arn.! Prodr. 1. p. 190.

East Indian Peninsula. Dindygul Hills, *Wight !*

* * *Legumine oblongo glabro.*

7. C. *filipes*, (sp. n.) prostrata, pilis longis ciliata, caule filiformi gracillimo, stipulis nullis, foliis oblique cordato-ovatis sublanceolatisque, pedunculis 1-2-floris tenuissimis, calycis laciniis lanceolatis infimaque angustiore corolla triente brevioribus, ovario multiovulato, legumine ovoideo glabro calyce duplo longiore.—Species gracillima. Folia vix semipollicaria. Flores magnitudine *Heylandiæ*. Ovula fere 20. Legumen 3 lin. longum.

Western India. Very common in grassy situations in the Island of Salcette, near Bombay, *Jaquemont !*, in the Deccan between Nasik and Gutpoor, *Edgeworth !*

8. C. *prostrata*, (Roxb.!—W. et Arn! Prodr. 1. p. 189).—Mart. Denkschr. Acad. Mun. 6. p. 155. t. E. Wall. Cat. n. 5419.

Lower India. Courtallum in the Peninsula, *Wight.!* Monghyr and Sukanaghur, *Hamilton !* Sadhoura, *Edgeworth !* Kheeree Pass, *Royle*, Prome, *Wallich !*

9. C. *filiformis*, (Wall.! Cat. n. 5389) diffusa, pubescens, ramulis tenuibus, stipulis parvis subreniformi-acuminatis,

foliis ovatis oblongisve basi angustatis utrinque pilosulis subtus pallidis, pedunculis filiformibus 1-2-floris, calycis adpresse pilosi laciniis lanceolatis corolla parum brevioribus, ovario multi-ovulato, legumine oblongo glabro calyce triplo longiore. — Folia sæpe bipollicaria. Flores magnitudine *Heylandiæ*. Legumen 8-10 lin. longum.

Mountains of Prome, *Wallich !*

10. C. *humifusa*, (Grah. ! in Wall. Cat. n. 5421) diffusa, prostrata, villosa, stipulis parvis setaceis reflexis, foliis obovatis ovatisve rarius oblongis utrinque pilosis subtus canescentibus, pedunculis tenuibus 2-4-floris, bracteis minutis setaceis, calyce subadpresse piloso corollam subæquante, ovario multi-ovulato, legumine oblongo glabro calyce dimidio longiore.—Planta sæpius parva, humilis. Flores minimi. Legumen vix 3 lin. longum.

Himalaya. Nipal, *Wallich !*. Firhill at the height of 4 to 5000 feet, *Edgeworth !*

11. C. *acicularis*, (Ham. ! in Wall. Cat. n. 5390), diffusa, prostrata, pilis longis hirta, stipulis lanceolatis reflexis, foliis obovatis ovatis oblongisve utrinque pilosis subtus pallidis, pedunculis 6-20-floris, bracteis cordato-lanceolatis, calycibus pilis longis hirsutissimis corollam æquantibus v. superantibus, ovario multi-ovulato, legumine oblongo glabro calyce dimidio longiore.—Folia quam in C. *ferruginea* minora. Species inter affines floribus parvis numerosis pilosissimis distinctissima.

Eastern India. Masurgunj, *Hamilton !* Sillet, *de Silva ! Gomez !* Mountains of Prome and Taong Dong, *Wallich !*

12. C. *ferruginea*, (Grah ! in Wall. Cat. n. 5398), prostrata, diffusa, ferrugineo-villosa, stipulis oblique lanceolatis acuminatis deflexis, foliis ovato-oblongis rarius lanceolatis utrinque pilosis subtus pallidis, pedunculis 2-4-floris, bracteis bracteolisque parvis linearibus, calyce villoso corollam subsuperante, ovario multi-ovulato, legumine glabro calyce 2-3-plo longiore.—C. *obliqua*, Wall ! Cat. n. 5388 *B* et *C*.—C. *canescens*, Wall. ! Cat. n. 5415. C. *crassifolia*, Ham. ! in Wall. Cat. n. 5416.—Affinis C. *humifusæ* sed flores plus

duplo majores et legumen maturum 8-10 lin. longum. Simillima etiam C. *ovali* (ex America boreali) sed folia hujus sæpius breviora et stipulæ saltem folii pedunculo oppositi plus minus decurrunt.

Mountains of India. Goolpara, *Hamilton!* Nipal, *Wallich!* Mishmee hills, *Griffiths!* n. 19, Taong Dong, *Wallich!* also Ceylon, *Walker!*

β. major, calyce 8 lin. longo, legumine sesquipollicare, Philippine Islands, *Cuming!* n. 1628. An. species proprio.

*** *Legumine oblongo hirsuto.*

13. C. *evolvuloides,* (Wight.! in Wall. Cat. n. 5410) prostrata, villosa, stipulis lanceolatis deflexis, foliis obovatis ovatisve rarius oblongis obtusis utrinque piloso-hispidulis, pedunculis 3-6-floris, bracteis lanceolato-acuminatis, calycis hirsuti laciniis immarginatis corolla triente brevioribus, ovario multi-ovulato, legumine oblongo hirsuto calyce subtriplo longiore.—C. *hirsuta,* Wall.! Cat. n. 5413, *A. C.*, C. *evolvuloides,* W. et Arn.! Prodr. 1, p. 188 ex parte.—A sequente foliis parvis apice rotundato-obtusis facile distincta.

Indian Peninsula. Dindygul hills, *Wight!* also Ceylon according to *Arnott.*

14. C. *hirsuta,* (Willd. Spec. 3, p. 978), prostrata, piloso-hispida, ramulis tenuibus rigidulis, stipulis lanceolato-setaceis patentibus, foliis ovatis oblongis lanceolatisve acutis utrinque parce pilosis, pedunculis 3-5-floris, bracteis lanceolatis acuminatis, calycis pilosi laciniis immarginatis corolla brevioribus, ovario multiovulato, legumine longe piloso oblongo calyce duplo longiore.—C. *hirsuta,* Wall.! Cat. n. 5413, *B.* C. *dichotoma,* Roth. Nov. Pl. Spec. p. 340. C. *rubiginosa,* Roxb. Fl. Ind. 3, p. 269, non Willd. C. *bifaria,* Wall.! Cat. n. 5399 ex parte. C. *triflora,* Heyne in Wall. Cat. n. 5387.

Indian Peninsula, *Heyne!* Northern India. Choor, *Royle!* Sirmore in the Himalaya, *Edgeworth!*

15. C. *bifaria,* (Linn.! W. et Arn.! Prodr. 1, p. 188), Wall.! Cat. n. 5399 ex parte, et specimina nonnulla cum n. 5417. *B.* mixta.

Indian Peninsula, *Wight! Heyne!*

16. C. *multiflora*, diffusa, hispida, stipulis lanceolato-setaceis deflexis, foliis ovatis lanceolatisve acutis utrinque hispidulis, pedunculis rigidis plurifloris, bracteis lanceolato-setaceis, calycis hispiduli laciniis lanceolatis late marginatis corolla (maxima) parum brevioribus, ovario multiovulato, legumine oblongo hirsuto calyce vix duplo longiore.—C. *bifaria var. multiflora*, Arn.! in Nov. Act. Nat. Cur. 18. pars 1, p. 329.—C. *bifariæ* certe affinis, tamen vix pro ejus varietas habenda. Folia majora, firmiora, sæpissime acuta. Pedunculi 4-10 poll. longi. Bracteæ minores, angustiores. Flores duplo fere majores, calyce pollicari, vexillo amplo insigniter striato. Carina margine et dorso dense lanata.

Ceylon, *Walker!*

§ 3. *Alatæ.* Caules nunc diffusi, nunc basi tantum decumbentes, v. omnino erecti. Stipulæ omnes v. saltem folii pedunculo sub-oppositi plus minus secuo caulem decurrentes. Pedunculi pauci-rarius multi-flori, terminales v. laterales, rarius exacte oppositifolii. Legumen in omnibus polyspermum, glabrum.

The plants of this group, approaching in habit sometimes to the *Diffusæ*, sometimes to the *Erectæ*, are readily known by their stipules.

17. C. *rubiginosa*, (Willd.—W. et Arn.! Prodr. 1. p. 181). C. *ovalifolia*, Wall.! Cat. n. 5411.—Flores quam in C. *alata* paullo majores, habitus fere C. *evolvuloidis*.

Indian Peninsula. Dindygul hills, *Wight! Capt. W. Russell!* Mazaburam, *Sir F. Adam!*

18. C. *scabrella* (W. et Arn.! Prodr. 1, p. 181). C. *Wightiana* var. Wall.! Cat. n. 5358, *B.*—Flores quam in C. *alata* duplo majores, cœterum ei valde affinis.

Indian Peninsula, *Wight!* Ceylon, *Walker!*

19. C. *alata*, (Roxb.—DC. Prodr. 2, p. 124), erecta, elata v. basi subdecumbens, adpresse pilosa, stipulis triangularibus longe decurrentibus, foliis ovatis oblongisve subtus pallidioribus, pedunculis plurifloris, calycis laciniis lanceolatis, superioribus paullo latioribus corollam subæquantibus, legu-

mine breviter stipitato calyce pluries longiore.—Wall.! Cat. n. 5356. C. *sagitticaulis*, Wall.! Cat. n. 5357.

Indian mountains, Goolpara and Morung, *Hamilton!* Dhûn and Subsewalih jungles, *Edgeworth!* Himalaya, *Royle! Jacquemont!* Upper and Lower Nipal, *Wallich!* Sillet, *De Silva!* Prome mountains, *Wallich!*

20. C. *Wightiana*, (Grah.! in Wall. Cat. n. 5358, A.—W. et Arn.! Prodr. 1, p. 181.)

Dindygul hills, *Wight!*

[Besides the above, the following American species belong to the *Alatæ*: 1. C. *ovalis*, Pursh from North America; 2. C. *Hookeriana*, Alph. DC., from Mexico, scarcely different from C. *ovalis;* 3. C. *Purshii*, DC., North America; 4. C. *sagittalis*, Linn., North America; 5. C. *buplevrifolia*, Schlecht. Mexico; 6. C. *stipularia*, Desv., (C. *Espadilla*, Humb. et Kunth., C. *sagittalis*, Vell. Fl. Flum. 7. t. 111), from the West Indies to Brasil and Peru; 7. C.*Matthewsana*, sp. n. basi decumbens v. erecta, pilis patentibus hirsuta, stipulis floralibus lanceolato-acuminatis longe et anguste decurrentibus cæteris obsoletis, foliis oblongis lanceolatis linearibusve subtus glaucis parce pilosis, pedunculis lateralibus elongatis pancifloris, calyce corollam superante patentim piloso, legumine sessile; Affinis C. *pterocauli*, calyx multo major: Casapi in Peru, *Matthews!* n. 1934; 8. C. *pterocaula*, Desv. (C. *genistella*, Humb. et Kunth., C. *hexaptera*, Schranck), Guiana, Brasil, and Peru; 9. C. *velutina*, Benth., Brasil; 10. C. *Pohliana*, Benth., (C. *Heldiana*, Alph. DC.? Not. 8, Pl. Hort. Gen. p. 21), Brasil; 11. C. *divergens*, Benth., Brasil; 12. C. *otoptera*, Benth., Brasil; 19. C. *vespertilio*, Benth., (C. *racemosa*, Vell. Fl. Flum. v. 7. t. 106, forma parvistipula), Brasil.]

§ 4. *Glaucæ.* Caules adscendentes v. erecti, virgati, cum tota planta glaberrimi. Folia angusta. Stipulæ nullæ. Pedunculi pauciflori, terminales v. oppositifolii. Legumen polyspermum, stipitatum, glabrum. Species omnes hic enumeratæ.

21. C. *genistifolia*, (Schum. Beskr., Pl. Guin., p. 335),

glabra, tenuis, ramis foliosis subdichotomis, foliis lanceolatis v. oblongo-linearibus mucronatis subtus pallidis, pedunculis oppositifoliis 2-8-floris, bracteis lineari-subulatis, calycis laciniis subæqualibus lineari-lanceolatis tubo duplo longioribus, corolla paullo brevioribus, legumine cylindraceo stipite calycem æquante.

Tropical Africa. Accra *Vogel!* Guinea, *Isert.*

22. C. *glauca,* (Willd. Spec. 3. p. 974), glabra, glaucescens, ramis teretibus lævibus virgatis, foliis lineari-lanceolatis mucronatis, pedunculis terminalibus 1-4-floris, calycis laciniis inæquilatis tubo paullo longioribus corolla brevioribus, legumine breviter oblongo stipite calycem subæquante.

Tropical Africa. Damp forests of the Bondu *Heudelot!* in open grassy fields in Guinea, *Thonning.*

23. C. peduncularis (Grah.! in Wall. Cat. n. 5396).—W. et Arn.! Prodr. 1. p. 188.

Indian Peninsula, *Wight!*

§ 5. *Erectæ.* Herbæ v. frutices erecta, elata, sericea v. villosa. Stipulæ nullæ v. non decurrentes. Racemi terminales, sæpius multiflori, rarius demum oppositifolii. Legumen glabrum, calyce duplo v. pluries longius, polyspermum.

These are distinguished from the *Diffusæ* by their tall erect habit, from the *Eriocarpæ* by the smooth pod. Among the *Calycinæ* the C. *Mysorensis* has the large pod of the *Erectæ,* but the decumbent or at most ascending habit and the large very hirsute calyx assimilate it more to the remaining *Calycinæ,* which have a pod shorter than, or not much exceeding, the calyx.

* *Foliis supra glabris.*

24. C. *retusa,* (Linn.!—W. et Arn.!—Prodr. 1. p. 187), Wall.! Cat. n. 5405. C. *Paulina,* Schranck? DC.? Prodr. 2. p. 127.

Tropical Asia and America, on the sea coast or in maritime districts. A handsome species often cultivated in gardens and therefore in some of the stations it may not be truly indigenous. Indian Peninsula, *Rottler! Heyne! Wight!*

Sykes! etc. Bengal, *Roxburgh.* Banks of the Irawaddi, *Wallich!* Sands near the sea in the islands near Macao *Vachell! Millett! Beechey!* West Indies, *Wydler! Nicholson!* Surinam, *Hostmann!* n. 593. Maranham, *Gardner!* n. 5405. South Brasil, both in gardens and wild, *Tweedie!*

25. C. *sericea,* (Retz.—W. et Arn.! Prodr. 1. p. 186).—Wall.! Cat. n. 5406. C. *retusæ,* var. Willd. Spec. 3. p. 977? C. *macrophylla,* Weinm. Syll. Ratisb. 2. p. 26. C. *cuneifolia,* Schranck, Syll. Ratisb. 2. p. 78, (*Dolichos cuneifolius,* Forsk.)

India. A common but elegant plant found in most parts of India, *Roxburgh!* Birgunj and Nihinagur, *Hamilton!* Mountains of Upper India, *Lady Dalhousie! Royle! Jacquemont!* in gardens, *Edgeworth!* Assam, *Griffiths!* n. 500.

26. C. *Assamica,* (sp. n.) erceta, elata, stipulis minutis subulatis, foliis elongato-lanceolatis utrinque angustatis supra glabris subtus ramulis calycibusque sericeo-nitentibus, racemis multifloris terminalibus, bracteolis infra medium pedicelli setaceis, legumine sessili glabro.—Habitu C. *sericeæ* accedit. Pubes sericea, multo densior, in pedunculis calycibus foliisque junioribus subfulva, demum albida. Folia 4-6 poll. longa, acuta, uti in affinibus pellucido-punctata. Bracteæ lanceolatæ, acuminatæ, 2 lin. longæ. Flores magnitudine C. *retusæ.* Calyx profunde bilabiatus labio superiore demum fere ad basin fisso, inferiore cymbiformi integro v. breviter rariusve ad medium trifido. Vexillum dorso linea longitudinali pilosum.

Assam, (Herb. Hooker from Mrs. March.)

27. C. *Leschenaultii,* (DC.—W. et Arn.! Prodr. 1. p. 186). —C. *lupiniflora,* Grah.! in Wall. Cat. n. 5407.

Nilgherry hills, *Leschenault, Wight! Noton!*

28. C. *formosa,* (Grah.! in Wall. Cat. n. 5393). W. et Arn.! Prodr. 1. p. 186.

Nilgherry hills, *Noton! Wight!* A few garden specimens of *Podalyria sericea* occur amongst those of n. 5393 A of Wallich.

[The only American species of this group with leaves smooth above, which I have seen, besides the above-mentioned C. *retusa*, is C. *virgata*, Benth. from Brasil.]

** *Foliis supra sericeis v. pilosis.*

[The following American species should be here placed: 1. C. *nitens*, Humb. et Kunth., Tropical Mexico, Columbia and Peru, a very variable species having an extensive range and to which may probably be referred C. *bracteata*, Schlecht. C. *breviflora*, DC. and C. *nitidula*, Schranck.; 2. C. *foliosa*, Benth., from Brasil another very variable plant, sometimes approaching C. *nitens*; 3. C. *flavicoma*, Benth., Brasil; 4. C. *grandiflora*, Benth., Brasil; 5. C. *divaricata*, Benth., Brasil; 6. C. *acutiflora*, (sp. n.), fruticosa, divaricato-ramosa, stipulis subnullis, foliis ellipticis lanceolatisve acutis mucronatisque discoloribus, utrinque ramulis pedunculisque pilis adpressis canescenti-v. flavo-sericeis, racemis tenuibus pauci-floris, bracteis bracteolisque sub calyce subulatis, calycibus maximis adpresse pubescentibus acutis corolla longioribus. C. *breviflora*, Benth. in Herb. Mus. Vind. MS. non DC. Brasil, *Vauthier, Pohl*; 7. C. *Martiana*, (sp. n.), fruticosa, ramosa, undique pilis fulvidis hirsutissima, stipulis subnullis, foliis confertis oblongis mucronatis margine recurvis discoloribus utrinque dense sericeis, racemis brevibus paucifloris, bracteolis sub calyce bracteisque lanceolatis calycibusque hirsutis, corolla calyce parum excedente; Brasil, *Martius*, n. 1142; 8. C. *Tweediana*, (sp. n.), erecta, tota pilis longis aureo-fulvis hirsutissima, stipulis minutis subnullis, foliis sessilibus obovatis oblongis lanceolatisve obtusis acutisque utrinque villosis, racemis longe pedunculatis multifloris, calycis hirsutissimi laciniis inferioribus lineari-subulatis, bracteolis supra medium pedicelli bracteisque linearibus, vexillo præter lineam dorsalem glabro calyce longiore; Porto Alegre, *Tweedie*.]

29. C. *salicifolia*, (Heyne!—W. et Arn.! Prodr. 1 p. 182.) —Wall.! Cat. n. 5359 *A*. Folia minime *Salicis*. Legumen bipollicare.

Indian Peninsula, *Heyne! Wight!*

30. C. *barbata*, (Grah.!—W. et Arn.! Prodr. 1. p. 181.)—Wall.! Cat. n. 5394. Flores ampli.

Nilgherry hills, *Noton! Wight!*

31. C. *longipes* (W. et Arn. Prodr. 1. p. 183.) Species a me non visa.

Indian Peninsula, Colemala, *Wight.*

*(To be continued.)**

A Tribute to the Memory of ADELBERT VON CHAMISSO, (*especially with reference to his devotion to Botany*), *by* D. F. L. VON SCHLECHTENDAL.

(Translated from the German.)

WHEN, in the year 1824, I began executing my plan of publishing a periodical work on Botany, conducted upon purely scientific principles, I received much encouragement by the promised assistance and co-operation of a very celebrated individual, who, as a man of learning, was possessed of various acquirements in many branches of knowledge, who had travelled much in distant parts of our world and lastly, as a poet, had been admitted among the German nation, of which, however, he was not, by birth, a native. This person was Chamisso, and with him I was connected for many years; for though he was considerably my senior in age, yet our mutual love for the study of nature rendered us close and intimate companions. His successful poems have received their due meed of praise, and his personal amiable qualities gained the affection of all who knew him; but Chamisso in his quality of a Botanist, has never obtained the credit which he deserves, and upon me, therefore, does the pleasing though mournful office devolve of recording his value, in these pages† which he assisted to originate and to fill, and from which his valuable contributions have been now withdrawn for four years, as it is so long a time since Chamisso died, having survived his wife but a short period. It is a melancholy consideration, that little, except the irreproachable character and well-earned fame of their father, was left as an inheritance to his family of seven children. Chamisso was very much a self-taught Botanist. He first commenced the study of plants at Copet, situated near the Lake of Geneva, where Madame de Staël had a beautiful residence. Her promising son, the Baron Auguste Von Staël Holstein was much attached to Chamisso, who was his first instructor in Botany and the earliest companion of his botanical excursions, which, having exhausted the immediate vicinity, were extended to St. Gothard and the country round Mont Blanc. Here Chamisso laid the first foundation of his noble collection of plants, to which Necker and other scientific friends made various additions in the way of presents. In the year 1812, the subject of our memoir went to Berlin, that he might study there, and zealously joined the ranks of collegians attending the lectures of natural science with a view to qualify himself for holding ultimately a professorship. At that time, the feeble state of my health having compelled me to relinquish the military career on which I had just entered, I was much devoted to the study of nature, and in 1813, I became first acquainted with Chamisso and was wont to accompany him in his botanical excursions. Well do I remember the many incidents of these herborizations; on foot, we used to set out upon very long journies, which often led us into swamps and thickets, where we were alternately soaked with heavy rains and scorched by the burning sun. To save time and be ready for an early morning start, we often slept on the ground, without any shelter at night, for it was chiefly on Saturdays and Sundays that we made our excursions. Chamisso was ever the foremost, the man distinguished for energy of mind and determined perseverance among our party, which often consisted of many individuals. An antique garb, once the state dress of a South Sea Chief, much worn, mended and stained, with a black cap of cloth or velvet, a large green box suspended by leathern straps over his back, and a short pipe in his mouth, together with a rude tobacco pouch: such was the attire in which he sallied forth. And it may be supposed that when evening came and our Botanist was weary, travel-soiled, he did not make a very splendid appearance while bearing a pocket handkerchief crammed with plants, he met, on returning to Berlin, the *beau monde* of that capital all in their Sunday attire and walking in the outskirts of the city. Many a good-humoured jest did he pass on those individuals of our party, who preferred a bye-way to the crowded streets on such occasions.

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* In the Enumeration of collections, p. 424, Colonel Sykes's have, by mistake, been stated to be from the *Punjaub* instead of the *Deccan.*

† "Linnæa, Ein Journal für die Botanik."

About this time Chamisso frequently visited the estate of Count von Itzenplitz near the Oder; here he composed his well-known romance, "Peter Schlemihl, or the Man without a Shadow," and also devoted much time to botanical studies, assisted by the Count's gardener, Walter, and published the Annotations to Künth's Flora of Berlin. Aquatic plants, especially the genus *Potamogeton*, engrossed his attention, and he devoted much time to studying their structure. But a wider field was soon to open upon him, for in 1815, he engaged to accompany, as naturalist, the expedition fitted out by Count Romanzoff and embarked at Copenhagen on board the ship "Rurick," that he might circumnavigate the globe and obtain some knowledge of tropical and arctic vegetation. A three years' voyage, however, convinced Chamisso that many difficulties and disappointments must ever attend such expeditions, and that the limited accommodation of a vessel, with the peculiar ideas of the captain, and the chance of accidents and many other obstacles, are apt to defeat a naturalist's best intentions and endeavours. Chamisso's energy and zeal enabled him to overcome many of these disadvantages and to amass a rich collection, particularly wherever he landed at seasons which were favourable for Botany. The coast at Plymouth, where he touched soon after sailing, afforded a happy augury in the *Centaurea nigrescens,* a species new to the *English Flora.* Their stay was short at Teneriffe, and the autumnal season and rainy weather prevented his finding many plants; but at St. Catherine's, on the Brazilian coast, the riches of tropical vegetation made a most powerful impression on his mind, and he collected largely, in spite of such a series of wet days as injured his specimens, curtailed his excursions and partially destroyed the paper in which his plants were deposited.

Nothing can be more adverse to a Botanist than the extremes of weather which Chamisso experienced. Whereas the rainy season had prevailed in Brazil, the hot sun had scorched up all vegetation in Chili, which he reached in February 1816. Landing on Kamtschatka in June, the early spring flowers were just unfolded, and here he received the welcome addition to his stores of two chests of plants, which the unfortunate Redowski had collected and left behind; and though no particular stations were assigned to the several specimens, yet they were valuable as contributing to show the productions of these countries.

The coasts and islands of the seas which divide America and Asia, afforded a rich harvest and recalled to the mind of Chamisso those alpine meadows in Switzerland where he had formerly botanized; a considerable similarity existing both in the forms and affinities of their vegetable productions. No part of his collection was richer than this. The sandy shores of California, hitherto hardly known to Botanists, wore their autumnal garb and exhibited many of the plants which have since been introduced to our gardens by Douglas, &c. Chamisso gathered largely in the Sandwich Islands and the interior of O-Waihi; though the difficulty of conveying and preserving specimens during the rainy season prevented his collections being so perfect as in the more northern districts. The meagre Flora of the Radack group was quite completed during their longer stay, and a second visit to the north, especially to Unalaschka, produced valuable additions to the former stores. Guajan and

Manilla also yielded their treasures, and an excursion in the interior of the latter island convinced our Botanist that its luxuriant vegetation is replete with interest and novelty.

The last herborization that Chamisso was able to undertake during this voyage, was at the Cape of Good Hope, when, accompanied by Mündt and Krebs, he detected several things that had not been remarked in this part of the world. How many rich and verdant coasts was he compelled to pass, how many waving palms vainly beckoned him to come and examine their beauties, as the ship bore him away to sea. And together with suppressed wishes and fruitless regrets, how mortifying was often the spectacle, when the objects which he had collected with so much labour were destroyed, and his zeal for science was slighted. The only individual who entered at all into his tastes, though he possessed not the same energy in collecting, was Eschscholtz. He too, gathered some plants and profited by the liberality of Chamisso, who exchanged duplicates and gave him specimens of whatever he could spare. Eschscholtz himself described only a few of his specimens, but as he communicated them to other writers, we find his *Carices* described by C. A. Meyer and some few other plants here and there by different writers.

The expedition of the Rurick was one of no common importance and expense, but still Chamisso was obliged to publish his collections at his own cost. Returning to Prussia, his adopted country, he presented the zoological and mineralogical portion to the University Museum at Berlin, and commenced arranging his plants according to their places of growth and natural families; still uncertain how he should himself be able to lay them before the world, and yet willing to lend a helping hand to other naturalists, foreigners and others. In the year 1819 he gave his *Ranunculaceæ* to me, that I might render more perfect my *Animadversiones Botanicæ in Ranunculeas Candollii.* Three new genera, natives of California and Chili, viz: *Romanzoffia, Eschscholtzia,* and

Euxenia, were presented by him to President Nees von Esenbeck for publication in the *Horæ Physicæ Berolinenses*, in which work also appeared, from the pens respectively, of his friends Ehrenberg and Hornschuch, the *Fungi* and *Mosses* that he had collected during his travels.

In 1819 an honorary diploma from the University of Berlin conferred on him the title of Doctor of Philosophy, and the minister von Altenstein appointed him Assistant in the Berlin Botanical Institution, charging him to pay particular attention to the Botanical Garden. Accordingly he removed his residence to the village of Neu Schöneberg that he might be near the garden, and he began making a collection of cultivated plants and also commenced working on the fruits of his voyage. It was his plan to publish first the numerous beautiful species of *Reed grass*, that he had brought home, illustrating those especially of the northern districts, with figures drawn by himself, aided by our mutual friend Eyssenhardt. Unhappily, the latter, who was Professor at Konigsberg, and who had been zealously preparing a *Monograph* on this tribe, died soon after, in the prime of life, and the great fire, which occurring in the summer of 1822, destroyed Chamisso's peaceful dwelling, and though it alike spared human life and his valuable collections, yet materially damaged many loose portions of his treasures and induced him to quit the country and reside in Berlin. The Botanic Garden did not give him full employment, and the Royal Herbarium, founded by the minister von Altenstein on the basis of Willdenow's collections, held out an agreeable prospect of occupation to our Botanist. This Herbarium was placed under my special charge and temporarily lodged in a building near the Botanic Garden, which affording, however, no accommodation for the superintendents, we were obliged to walk thither daily from Berlin. Winter weather or summer, wet or dry, my friend and I used regularly to meet there every morning, to pursue our common labours.

Just at this time, Chamisso was ordered by Government to prepare thirty small Herbaria, for the purpose of facilitating the study of Botany in schools, which should contain the most known plants, both wild or cultivated, accompanied by a sort of explanatory catalogue; in short a familiar Grammar of Botany. This task he executed and wrote a "Glance at the principal botanical productions, either wild or cultivated, in the North of Germany, especially the most useful and the most noxious kinds; with some general remarks on the Vegetable Kingdom; by Adelb. Von Chamisso, Berlin, 1827." In this little work, Chamisso endeavoured to call attention to the more striking aspects of the vegetable world.

The beautiful collection of *Ferns*, which he had confided for description to Prof. Kaulfuss of Halle, appeared in 1824, but six years elapsed from the time of our subject's return from his travels, before any thing more than fragments of his discoveries was given to the world. He longed to publish them in a more complete form, and when I commenced my exclusively *Botanical Journal*, the *Linnæa*, Chamisso set to work in earnest on his plants, that he might embrace this opportunity of making them known. It was desirable to notice also those numerous undescribed plants, existing in the public collection, which the activity of Sellow in the Brazils and of Mundt and Bergius at the Cape, had detected; and to these, together with Chamisso's discoveries, a series of papers in the *Linnæa* was devoted, wherein we strove to define the specimens before us and to give general remarks upon them, with occasional illustrations by plates. Thus the northern plants were pretty well defined and published, except the grasses and *Cyperaceæ*.

The former had been given by Chamisso to his friend Trinius, that indefatigable labourer in this department of Botany, and the other portion he had reserved for his own illustration, but just at this period, the fire, as already mentioned, put all his work into disorder; many of his specimens were lost in the hurry and confusion attendant on that misfortune, and worst of all, his friend Eyssenhardt was no longer living to aid him, so that they were laid by for awhile and then the appearance of M. Meyer's work forestalled many of Chamisso's discoveries. For most of the *Carices* in Eschscholz's collection having been imparted to Meyer, that author naturally published the new species; and although Chamisso's collection was still more extensive and I eagerly proffered my aid in describing them, and he actually had commenced the work, yet, just at this conjuncture, my removal to Halle proved the unfortunate cause of the task being finally abandoned. So, likewise, passed out of his own possession the beautiful outlines and analyses which Chamisso's hand had made of the *Carices* and *Eriophora;* accompanied by descriptions, drawn up from numerous specimens. Still, much that is new and valuable has been made known in various ways; Lessing having published all the *Compositæ,* Bentham the *Labiatæ,* Schiede the *Lineæ,* De Gingins the *Violæ* and Ernst Meyer the *Junci.* In the beautiful *monograph* by Count Sternberg, Chamisso's *Saxifrages* find a place, and, since their discoverer had withdrawn from botanical labours, his *Leguminosæ* have been described by Vogel in the Linnæa and his *Ericæ* by Klotzsch. Thus we see how freely the treasures which this eminent botanist and traveller was enabled to collect have been imparted by him, wherever he thought a good use would be made of them. Happily this noble spirit of liberality is gaining ground among Botanists and superseding the narrow minded avarice with which naturalists were too apt to keep to themselves every thing but their opinions and dogmas on science. A similar disposition was evinced by Chamisso, when he presented to the Royal Herbarium a specimen of every thing he had collected, annexing this condition to the sale of his plants after his decease, that the purchaser should be obliged to do the same by all such species as were not already determined and published. Great, too, was the interest which he felt in the prosperity of the *Linnæa;* he aided it by his own frequent contributions and also by the still greater and more unpleasing task of correcting the printed sheets, which was a truly laborious business, and he farther promoted its success by insisting that every person to whom he gave plants for description should print their essays in this publication. The parcels from Schiede he assisted in distributing and describing, and the same by the collection of Erman which also appeared in those pages.

Most of Chamisso's botanical works were executed while in my company, as we sat and worked opposite to each other at one table, examining and determining and consulting about the progress of our labours. He either botanized while he walked by the path that leads from the city gates to Schöneberg, or revolved in his mind some poem, which he speedily committed to paper on entering the house, so that I was frequently privileged to become the first depositary of his elegant ideas; and as my friend had not enjoyed those advantages of early education and much reading which tend to impart confidence in one's own powers, so he was peculiarly glad to ask advice and he thankfully received encouragement. How well, however, Chamisso was able to stand alone and to work unaided, became evident, by his essays on many groups of plants which he commenced and completed without any help, at a period when severe sickness obliged me to discontinue my literary occupations, and to absent myself frequently from the Royal Herbarium which is situated at half a stund distance from the city gates. It is much to be wished that Chamisso had been more distrustful of his bodily powers, not risking his health by incessant exposure to rain wind, and snow, which caused him to contract severe colds, and brought on in 1833 a bad cough, from which he never entirely recovered, but which finally caused his death.

Though no title or badge of honour was conferred on this celebrated botanist, and only an inconspicuous looking plant among the *Amaranthaceæ*, described by his friend Künth, bears his name, yet he will long be remembered as an enterprizing traveller, an industrious botanist and an author possessed of much and varied ability in different departments of literature and science.

On BAXTERIA (*of Mr. Brown,*) *a New Genus of Plants from South Australia,* by W. J. H.

(TAB. XIII. XIV. XV.)

BAXTERIA, *Br. Mst.*

Flores hermaphroditi. *Perianthium* hexaphyllum, cartilagineum, sepalis æqualibus lanceolato-subulatis, basin versus constrictis quasi articulatis, subbiserialibus, nempe tribus magis interioribus. *Stamina* 6, persistentia, sepalis inserta: *Filamenta* subulata, cornea, sepali prope medium affixa et cum eo decurrentia: *Antheræ* lineares, angustæ, basi affixæ, biloculares, longitudinaliter dehiscentes. *Ovarium* 1. *Stylus* 1. longissimus, subulato-acicularis, rigidus, acute trigonus, persistens. *Stigma* acutum. *Capsula* coriaceo-centilaginea, obovata, subsexangularis, superne truncata, stylo longo persistente terminata, 3-locularis, 3-valvis, valvis septifragis bipartitis, loculis monospermis. *Endocarpium* corneum, demum e basi separabile. *Semina* globosa ad basin loculorum ut videtur affixa.—Planta *in oram meridionali-occidentalem Australiæ indigena, acaulis.* Radix *crassa, fibris grossis paucis emittens, superne multiceps.* Folia *radicalia longissima, bi-tripedalia,* 2-3 *lineas lata, lineari-subulata, cartilaginea, rigida, pungentia, arcte striata, intus canaliculata, dorso subcarinata; basi eximie dilatata, duas uncias lata, membranacea, pallida.* Flores *magni, foliorum consistentia, etiam magis rigidi, solitarii, in ramis brevibus axillaribus bracteatis terminales;* bracteis *numerosis foliiformibus imbricatis,* 2-4 *uncias longis.*

Baxteria *australis.* (TAB. XIII. XIV. XV.)

HAB. King George's Sound, Australia, *Mr. Baxter, James Drummond, n.* 464.

My first information respecting this remarkable plant, was in a letter received from James Drummond, dated "King George's Sound, October 15th, 1840," extracts from which are given in the first Vol. of this *Journal,* p. 80. "Here, said Mr. Drummond, I met with Mr. Preiss, and we have been botanizing together, and have found a remarkable plant belonging to *Asphodeleæ,* so nearly allied (in general appearance, and especially in the foliage) to *Xanthorrhæa,* that I at first took it for one of that genus. The seed-vessels and seeds, however, which are situated in the axillæ of the lower leaves showed us our mistake. This plant is common in the neighbourhood of King George's Sound, about the Settlements, and from the inconspicuous (or concealed) nature of the inflorescence, has doubtless been overlooked as something not in flower. The style which remains on some of the green seed-vessels, is full 2 inches long and triangular at the base. We know nothing of the flowers, as the season for them was entirely past."

Some seed-vessels accompanied that letter; but the seeds were immediately sown, without any minute examination, and they failed to germinate. A few months after the specimens arrived: but these, as described by Mr. Drummond, exhibit no flowers, and, what is worse, the capsules are all burst, and the seeds have in every instance escaped, even in those capsules with the entire style remaining, and where the bursting appeared to be but partial. From such specimens it might appear presumptuous to represent anything like flowers in the accompanying plate; but it will be seen, from the harsh and rigid character of the floral envelopes, and even of the filaments of the stamens, which are perfectly hard and horny, that they have undergone little or no change, in passing to the state of over-mature fruit; the very ovary and style retain their perfect form in several instances, as just observed, even after the escape of the seeds.

Upon showing these specimens to Mr. Brown, that "Botanicorum princeps" immediately recognised them as a plant which he had received from Mr. William Baxter, and which it was his wish, on finding it to be a new genus, to dedicate to its original discoverer. And surely when the labours of Mr. Baxter in the regions where this plant is a denizen, are considered, no name can be more suitably given to so remarkable a plant. I adopt it with the greatest pleasure, and only regret that I cannot be the medium of making known to the public the generic distinctions* of the illustrious author and his views of its affinities; in regard to which it will be seen that Mr. Drummond refers it, in all probability on account of the resemblance its foliage bears to *Xanthorrhœa*, to *Asphodeleæ*. As far as my imperfect specimens will allow me to form an opinion, I should be rather disposed to refer it to *Junceæ*; mainly, however, I must confess, on account of the glumaceous or rather horny character of the perianth.

Barring the absence of flowers and seeds our specimens are in a very good state.—The root is short, but thick, oblique, and may almost be called a *rhizoma*, from the sides of which descend many coarse fibres, simple, and about as thick as a swan's quill. The summit of the root divides into several heads, each of which is a dense cluster of leaves, the outer ones short, 5-6 inches in length, the inner ones 2 and 3 feet long; these are all linear-subulate, when dry, of a dingy green colour, 2-3 lines wide, finely striated, rigid, chartaceous, pungent, channelled on the inner surface, slightly keeled on the back, the edges scarcely rough; the bases are remarkably dilated so as to be 2 inches or more broad, closely imbricated, membranaceous striated, pale brown. From the axils of several of the outer of these leaves, arise numerous short stalks or branches, closely covered with imbricated bracteas resembling the leaves, but only 2-3 inches long, the broad bases bearing a large proportion to the subulate blade; and each of these stalks or branches bearing a single very large flower, longer than the upper bracteas. The perianth is of 6 subulate sepals, as above described. These and the stamens and style seem to remain till the fruit is quite mature, and indeed long after, except that, when the three double valves of the capsule are burst open, they separate from the upper part of the style, or only carry away the base of that organ. There is a peculiarity in the endocarp, which is firm and horny, and which separates from the base, apparently elastically, and remains attached to the apex of the valves. When these valves are fully expanded, the three plates of the dissepiment are seen in the centre, as shown at Tab. XV. *f.* 6. and the point of attachment of the seeds, as it would appear, is at the base of each cell.

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* Since the above was printed, Mr. Brown has had the kindness to place in my hands his distinguishing character and remarks, as follows:

BAXTERIA.

Char. Gen. Perianthium sexpartitum, regulare, foliaceum, persistens. Stamina sex ipsis basibus dilatatis cohærentibus foliolorum perianthii inserta: *Antheris* basi affixis.

Ovarium triloculare, loculis monospermis. *Stylus* 1. *Stigma* tridentatum.

Capsula trilocularis (demum) sexvalvis: *valvæ* a septis invicem in columnam trigonam cohærentibus dissilientes.

Semen adscendens, ovatum.

Planta, *subacaulis, radicibus fasciculatis.*

Folia *linearia acuta elongata (pedalia-sesquipedalia), planiuscula, nervoso-striata, rigida, glaberrima, basibus dilatatis membranaceo-scariosis multinerviis.*

Flores *pedunculos laterales brevissimos terminantes, multibracteati:* Bracteæ *imbricatæ foliaceæ e basi dilatata ovali-concava lineari-subulatæ perianthium vix æquantes.*

Obs. *Affinitas.* Kingia, Dasypogon, Calectasia, Xerotes et Baxteria Tribum Juncearum Novæ Hollandiæ propriam efformant.—Brown, MSS.

Baxteria *australis.*

Ad oras austro-occidentales Novæ Hollandiæ prope King George's Sound, Anno 1829, detexit *Gul: Baxter.*

REFERENCES TO THE PLATES.

Tab. XIII. XIV. Baxteria australis: *nat. size;* some of the longer leaves cut away; and showing, among the outer leaves, the copious bracteated flowering, or rather fruiting peduncles.

Tab. XV. *Fig.* 1. Flowering bracteated peduncle, *f.* 2. flower removed from the bracteas. *f.* 3. Fruit before the full bursting; but which is at the same time probably a representation of the pistil. *f.* 4. Sepal, or leaf of the perianth. with its stamen. *f.* 5. Capsule burst. *f.* 6. The same, the valves more expanded, and exhibiting the dissepiments of the cells, from which the valves are detached, and showing the separation of the endocarp of the valves from the base:—*all, nat. size.*

Figure and brief description of Castanea chrysophylla; by W. J. H.

(*With a Plate.*—Tab. XVI.)

Of the few species of *Chestnut* that are known to us, the majority are natives of the East Indies or the Indian Archipelago. The well known sweet chestnut, *Castanea Vesca*, inhabits the South of Europe, and authors have described in the United States of America, the *C. Americana*, scarcely differing from the European species: and *C. pumila*, a very distinct and handsome species. But it was the good fortune of Mr. David Douglas to discover, in North-western America, a new species, which in the beauty of its evergreen foliage far exceeds any hitherto known to us, and which it is the object of this notice to illustrate with a figure.

Castanea *chrysophylla, Dougl. mst.*; foliis sempervirentibus lato-lanceolatis coriaceis acuminatis integerrimis glabris subtus aureo-farinosis. (TAB. XVI.) *Hook. Fl. Bor. Am. v. 2. p.* 159.

HAB. Common on the Grand Rapids of the Columbia, Cape Orford and near Mount Hood; N. W. America; constantly inhabiting the hills. *Douglas.*

Mr. Douglas spoke of this as a tree of great beauty, varying in height from 20 to 70 feet. The branches are clothed with persistent evergreen leaves, 4-5 inches long, full and bright green colour above, below, the younger ones especially, covered with a minute farinaceous or powdery substance, of a rich and full golden yellow colour, in age, however, becoming rusty, somewhat brown, quite entire. From the axils of the leaves arise the catkins, of which I have only seen a few in flower. These are scarcely 2 inches long, including the peduncle. Sometimes all the flowers on a catkin appear to be male, and sometimes the two or three, or more, lower ones are female. The latter are succeeded by a few clustered fruits, which in my specimens are immature, as large as ordinary-sized marbles, and densely clothed with rather long straight copious prickles.

I am the moreanxious to direct attention to this plant, for there is a good reason to believe, from its locality, that it would prove perfectly hardy in this country: and because it has been my good fortune, under the liberal patronage of the Governor and Directors of the Hudson's Bay Company, to unite with the Earl of Derby in sending out an able collector, (Mr. Burke) to North-western America and California, through whom we have every prospect of seeing this splendid tree introduced to our own pleasure-grounds and plantations.

TAB. XVI. A fruiting specimen of *Castanea chrysophylla*, and a flowering catkin :—*nat. size.*

Description of a new species of DRAPETES *from New Zealand; by* W. J. H.

(*With a Plate.*—TAB. XVII.)

The genus *Drapetes*, of the order *Thymeleæ*, was founded by Lamarck, upon a solitary species detected by Commerson in the Straits of Magelhaen, and named by him *Drapetes muscosa.* The same plant was found by D'Urville on the highest point of Mount Châtellux in the Falkland Islands. I have already, in speaking of a new *Calceolaria* of New Zealand (Icones Plantarum, vol. 6. TAB. DLXI), had occasion to observe an affinity in the vegetation of that country to that of the more temperate parts of South America, particularly in the existence of certain genera which had previously been supposed to be peculiar to the extratropical portion of the great South American Continent. The discovery of a new *Drapetes* in New Zealand serves to strengthen that affinity. I first received beautiful specimens of this species that were gathered by Dr. Dieffenbach, on the summit of Mount Egmont, and I find the same in a collection of plants kindly given me by Mr. Bidwill from the summit of Tongariro, another high mountain of the Northern Island of New Zealand. I have the pleasure to name this after its first discoverer;

Drapetes *Dieffenbachii*, Hook.; fruticosa, caule repente ramosissimo, foliis dense imbricatis linearibus obtusis apice barbatis, floribus brevissime pedicellatis foliis immersis, perianthio fauce squamato, pedicellis ovarioque apice barbatis. (TAB. XVII.)

HAB. High mountains of the Northern Island, New

Zealand; Mount Egmont, *Dr. Dieffenbach;* Tongariro, *J. T. Bidwill, Esq.*

Descr. This forms a small low procumbent shrub, sending out fibrous roots from beneath; below very woody, about the thickness of a crow's quill and bare of leaves, but marked with the scars of fallen ones. Branches very numerous, ascending, clothed with numerous, densely imbricated opposite small leaves, which are linear, obtuse, plane above, convex beneath, the margins ciliated and the point terminated by a tuft of hairs. The flowers are minute, aggregated at the apex and almost wholly immersed in the terminal leaves. Pedicels short, very hairy at the top where it is articulated. Perianth, with the tube swollen below, contracted above; the limb of four spreading broadly ovate segments, slightly ciliated at the margin. At the mouth of the tube and opposite the segments are 4 obtuse, short scales. Stamens 4, inserted at the mouth of the tube and alternate with the scales and the lobes of the perianth, in which particular, I believe, it differs from all the other *Thymeleæ;* for they, when the stamens are equal in number with the segments, or fewer, are opposite to them. Filaments slender, about equal in length with the lobes or segments of the perianth. Anthers subglobose. Germen oval, one-celled, one-ovuled, bearded at the apex and tipped with the style which is longer than the tube of the perianth, deciduous. Fruit nucumentaceous, ovate, crowned with the beard or tuft of hairs, one-seeded. Seed suspended, obovate. Albumen fleshy. Embryo immersed, the radicle directed to the hilum.

Tab. XVII. *Drapetes Dieffenbachii;* nat. size, *f.* 1. flower, *f.* 2. the same laid open, *f.* 3. fruit laid open, *f.* 4. seed, *f.* 5. seed cut through vertically, *f.* 6. Embryo removed from the seed, *f.* 7. upper, and *f.* 8. under side of a leaf:—*magnf.*

Figure and Description of a new species of ARAUCARIA, *from Moreton Bay, New Holland, detected by* J. T. BIDWILL, ESQ.

(*With a Figure.*—TAB. XVIII. XIX.)

Perhaps of all forest trees, certainly of all the Pine tribe, none has excited so much interest among botanists and cultivators as the several species of *Araucaria,* whether their vast size be considered, the singularity of their branches and foliage, stiff and rigid indeed in some, but graceful almost as ostrich feathers in others, (especially the *A. excelsa*), or the circumstance of their inhabiting only the southern hemisphere; each kind being confined to certain and rather restricted limits. The first that was known to Europeans was the *A. imbricata, Sir Joseph Banks',* or *Chili Pine,* which rears its lofty summit to a height of 150 feet among the mountains of Southern Chili, only in the interior, and as it appears only on the southern slopes of the Andes, so remote from any settlement that I never met with a traveller who had seen the tree in its native forests, nor heard of any that had been so privileged, save Ruiz and Pavon who first described it, and the accomplished German naturalist, Dr. Pöppig, whose highly interesting account of this tree I have given in the first volume of the "Companion to the Botanical Magazine," p. 357, &c. to which I must refer my readers. The excellent Menzies had the honour of introducing this noble tree to Europe in a living state. The large seeds are eaten not only by the natives, but by the Spanish Americans at Valparaiso; and it was at the table of the Governor of that capital or of some official character, that Mr. Menzies was struck with their appearance, as those of some new Pine, and requested permission to take some with him. These he planted in 1795, on board Captain Vancouver's ship, and five young plants were reared and brought to the Royal Gardens of Kew. There they flourished, and all, but one, have been given away (the last in 1841 to her present Majesty, Queen Victoria, for the pleasure grounds at Windsor); and that remaining is at once the pride and ornament of this establishment, and has for the third time borne cones, but which though they have attained to a large size, for want of male flowers, have proved abortive and imperfect. To us this species is the more important, as being the only one that proves sufficiently hardy to bear the winters of our climate, and hitherto the severest frosts have done it no injury; and seeds have been imported and reared, as is well known, by our nurserymen to a great extent, so that plants which a few years ago, could only be had, and with difficulty, at from two to five guineas each, may now be had for less than that number of shillings.

Closely allied to *A. imbricata,* and for a long time confounded with it, is another South American species, but wholly confined to the eastern side, and I believe only in the far interior mountains, of Brazil, in a much more northern latitude than the former, and consequently less hardy; this was at length distinguished by Richard, by the name of *A. Brasiliana.* It is more lax and spreading in its habit and the more graceful tree of the two. They are however both of them remarkable for the great size of their dark rigid foliage, the furthest removed from the acicular form so characteristic of the majority of the *Coniferæ.* The only other species hitherto known to us, present a very different appearance from the peculiar form and size of the leaves, more resembling those of some *Junipers;* they are the *Araucaria excelsa,* and *A. Cunninghami,* and these inhabit a widely different part of the world from those now noticed.

The first of them, namely *A. excelsa,* is a discovery for which we are indebted to Captain Cook's second voyage. On approaching Norfolk Island the officers observed a gigantic tree, rearing its huge trunk frequently to a height of 40 or 60 feet, like a basaltic column, below the branches. This proved to be a new *Araucaria,* though at first named, by Forster, *Cupressus columnaris*; it was then called *Dombeya excelsa* by Lambert, *Araucaria excelsa* in Aiton's Hortus Kewensis, 2nd edition, *Entassa heterophylla* of Salisbury, *Altingia excelsa,* Don mst. by Loudon in his "Hortus Britannicus," but again restored to *Araucaria* in Loudon's "Arboretum Britannicum." Of this majestic tree, I find a very interesting account in the Botanical MSS. of my friend, Mr. James Backhouse, now before me. "This stately tree is similar in figure to the Norway Spruce; but its branches are in more distant whorls, and usually about five in a whorl. The young lateral branchlets are deciduous, or at least, they fall off in great numbers. Some of the old trees growing in woods are 150 feet high, and a few are about 200 feet. The trunks of three on Mount Pitt, Norfolk Island, measured 23, 27, and 29½ feet in circumference, at 4 feet up. The two lips of the scales of the cone become united and form a ligneous covering to the seeds; external to this is a fleshy, terebinthaceous coat, containing a milky resinous juice; the cone resembles a globular pine apple in form, and has the scales deciduous. Large quantities of resin, like frankincense, are exuded from incisions in the bark. The timber is useful for inside work, but it soon perishes when exposed to the weather, especially as posts in the ground. The knots formed by the larger limbs of old trees which lose in some measure their regularity of form, are close grained, and afford handsome material for turning and inlaying. Under the bark of dead trees grubs of certain beetles feed in great quantities, making a noise in gnawing their way in some trees that have not long been felled, like a shower of rain. These afford food on Phillip Island, on which as well as on Nepean and Norfolk Islands, down to the margins of the cliffs, where the sea sometimes breaks, these trees abound with a singular bird of the parrot tribe, with long mandibles, and having some resemblance to a hawk. This bird is easily captured, and is not now found on Norfolk Island, but may have been destroyed there. In the woods the Norfolk Island Pine towers a hundred feet above the other trees; it is not so lofty in the smaller clumps on the open hills, nor when solitary. Trees of this species planted in Sydney first produced cones in 1837."

A very interesting group of these trees is represented on a plate by Mr. Backhouse in his excellent "Narrative of a visit to the Australian colonies."

An *Araucaria* a good deal resembling this at first sight and supposed to be the same, was seen by Sir Joseph Banks and Dr. Solander on the east coast of New Holland, in Cook's first voyage in 1770, and was naturally supposed to be the same species with that examined on Norfolk Island; but it was left for Mr. Allan Cunningham to detect the differences, and to send home specimens as well as living plants to the Royal Gardens, and to which the name of *Araucaria Cunninghami* was given by Mr. Aiton. From its abundance on the shores of Moreton Bay, it has been called the "Moreton Bay Pine;" but it is by no means limited to that district. "It occupies a range," says Mr. Cunningham, "of 900 miles between the parallels of 14° and 29½° on the eastern coast of New South Wales. On the alluvial banks of the Brisbane River, 27° 30′, it rises to a height of from 100 to 130 feet, with a girth of from 14 to 16 feet, and a clear trunk of 80 feet. It is found at a short distance from the river in latitude 28° and to the extent of 80 miles inland; but the trees are there comparatively small, and further inland they entirely disappear. Its maximum, therefore, is evidently on the coast, within the influence of the sea air."

As already observed, the Australian species of *Araucaria* differ remarkably in their foliage from those of the New World. It was therefore with no small degree of pleasure that the Linnæan Society received a communication from J. T. Bidwill, Esq., then resident at Sydney, giving an account of a new *Araucaria* of the country interior from Moreton Bay, of which the foliage could scarcely be distinguished from the Chili Pine. A specimen of a branch with foliage accompanied the communication, and a statement that the seeds of this Pine were extensively collected by the natives above Moreton Bay and used as food. In a voyage which Mr. Bidwill subsequently made to Moreton Bay, he resolved to visit the locality of this remarkable tree himself, and in the summer of the present year (1843) he has brought to England not only branches and cones and male flowers, but also a healthy young living plant. This noble tree I propose to dedicate to its discoverer, who is not only a successful cultivator of plants in his garden at Sydney, but who has been the means of making known to us many novel plants of Australia, and more especially of New Zealand.

ARAUCARIA BIDWILLI, *Hook.;*

Foliis patentibus ovatis pungenti-acuminatis demum bas insigniter dilatatis, amentis fœmineis in ramulis propriis lateralibus brevibus erectis ovali-subglobosis maximis, squamis laxis late alato dilatatis bi-labiatis labio inferiore seu apice acuminato reflexo, interiore acuto breviore. (Tab. X.)

HAB. Mount Brisbane range of hills, 70 miles, N. W. of Moreton Bay, Australia, *J. T. Bidwill, Esq.*

A tree, according to Mr. Bidwill's Notes, "growing from 100 to 150 feet high, with a remarkably stout trunk, which scarcely tapers for one half of its height from the base, covered with a smoothish black bark. Dead branches commence at about half way, and continue nearly to the summit, where the living branches are seen produced about sixteen in a whorl, the largest of them not 1½ inch in diameter, 12 feet long; branchlets distichous 1½ foot long; these living branches are densely crowded together, occupying in adult trees not 1-30th part of the whole height of the plant; (but this would not be the case, probably, if the tree grew in the open country); or, in other words, in the trees which I had the opportunity of examining, there are no live branches, except on those extremities which rise above the surrounding forest, and they form a very obtuse conical or almost hemispherical head." (*Bidwill.*) Leaves patent, sometimes almost standing out at right angles, spirally arranged on all sides, ovate pungently acuminate, of a remarkably hard and firm texture, slightly concave above, a little convex beneath and marked or impressed generally with two lines from the close application of the lower leaves in the infant state, dark green, glossy, when seen under a microscope beautifully marked with lines of minute pale dots:—their average length is rather more than ¾ of an inch, but occasionally I have seen them, probably the effect of accident, 1 or 2 inches long on some of the young branches, oblong-lanceolate, and more or less secund. In the younger and terminal branches the leaves are rather crowded, yet even there a singular dilation of the base may be observed, especially at the upper and under side; but in proportion as the branch enlarges by age the base of the leaf becomes more and more dilated, and at length so remarkably so, that the diameter of the *flattened* dilated base is equal to the length of the leaf, and takes a transversely hexagonal form, bounded by a white line, which separates it from the surrounding leaves, as shewn in the lower part of our main figure. Thus on the older branches, the leaves resemble a series of flattened hexagonal scales, with a leafy spine projecting from the centre. The cones are produced on the topmost branches, close to the central stem, "rarely more than ten or twelve in number, varying greatly in size and in form, from sphœrical to pear-shaped, the narrow part downwards, and oval." In my specimens the form of the cone is nearly oval, or approaching to globose, flattened at both ends, about 9 inches long and 7 broad, it is upright, and seated on a short leafy branchlet arising from a horizontal main branch. It is composed of a number of very large scales loosely compacted, and inserted upon a central column or receptacle. These scales are all spreading, the majority of them nearly horizontal, about 4 inches long and 3 broad. When lying in their natural position they present each a thickened face to the spectator, tapering to an edge or wing at each side; and towards the anterior edge or apex an acuminated and recurved spinous point appears, and these collected reflexed points are so stiff and pungent that the fruit is hard to lift in a perfect state, even with thick gloves on the hands:—above this seems to be another smaller scale; but when the scales are separated, this upper one is found incorporated with the lower, or, in other words is a duplicature of the scale itself, and may be accounted for by considering the scale as a leaf, of which the upper base is still more dilated or prolonged than in the stem-leaves above described, and that base folded down upon the upper face of its own leaf. Be that as it may, these two scales, or lips, as shewn in our figure 7, soon become conjoined into one, and the whole of the portion so united, forming indeed, the mass of the scale, is a very soft and pulpy substance, and bears within or upon it, the seed; this part of the scale, therefore, in the cones soon decays, and on being torn open, the seeds of a very large size and obovate, fall out blackened with the decayed pulpy matter. The seeds are 2 or 2½ inches long, and ¾ of an inch broad.

Besides the specimens from which the above description is chiefly compiled, Mr. Bidwill has also kindly furnished me with male catkins, of which one is represented at *f.* 3.; but whether found on the same or a different plant from the female, or on what part of the branches they are produced, I am ignorant. They are about 4 inches long, stout, cylindrical, apparently terminal on short leafy branches, and are composed of a great number of oblong scales closely compacted, presenting each on the outside a convex apex with an incurved point, beneath each scale are apparently six or more oblong anther-cells longitudinally placed; but their exact structure is not distinctly apparent.

"The native name of this tree is *Banza-tunza*, or *Banya-tunya*. The fruit it is said ripens only once in three years, and the precise period of the year when it does ripen seeds, does not seem to be known to the Aborigines who visit the trees at different periods to mark how it advances. The seed which is twice as large as that of the Chili pine, before it is ripe is very sweet, but acquires the same bean-like flavour, which has been remarked in those of *A. imbricata*, as it approaches maturity. It is greedily eaten by the natives at all times, before ripeness, raw; and when ripe, roasted and pounded into cakes. I have never heard of any white man who had tasted the ripe seed.

"The wood is very close grained, and is *said* to be very durable; but I do not know that any person can tell this, for I am certain that no tree has ever been cut down. I have seen a piece of wood, but it was cut from a plant 5 inches through and square, and strongly resembled Kawri (*Dammara australis*), appearing, however, firmer and closer grained." *Bidwill.*

TAB. XVIII. XIX. Fig. 1. Branch of *Araucaria Bid-*

willi. Near the base is a short leafy branch from which the cone is removed, *f.* 2. unusually formed leaf from among others, on a young branch; *f.* 3. male catkin; *f.* 4. antheriferous scale from the same:—*magnified*;) *f.* 5. cone; *f.* 6. upper view of a scale removed from the cone; *f.* 7. side view of the same:—all but *f.* 4. *nat. size.*

Figure and description of a new species of SENEBIERA *from Patagonia, by* W. J. H.

(*With a Plate.*—TAB. XX.)

SENEBIERA RHYTIDOCARPA, *Hook.*

Gracilis procumbens ramosissima, foliis linearibus integris v. pinnatifidis, floribus minutissimis diandris? silicula orbiculari compressa rugosa. (TAB. XX.)

HAB. Patagonia, *Tweedie.*

Stems slender, procumbent, very much branched. Leaves scarcely an inch long, the largest of them, linear, glabrous, entire or pinnatifid, with few (about 3) linear segments, acute at the apices. Corymbs small, of few very minute flowers; so minute, that in the dried state it is difficult to distinguish the structure. Calyx of 4 obtuse, concave sepals. Petals none, or not always present, for I think to have seen them in some flowers, small and resembling minute scales. Stamens, in the flowers here examined, only two perfect, opposite; there are besides four (in two opposite pairs,) abortive filaments; lanceolate, each with a tooth near the base on one side. The perfect stamens have the filaments singularly enlarged at their base with a depression on each side. The fruit is racemose, each raceme with 3-6 silicula. This is nearly orbicular, compressed at the sides, and singularly wrinkled or marked with pits. Valves hemispherical, keeled at the back, but not winged. Seed one in each cell. Embryo with the cotyledons curved upon the radicle, the apices again a little curved.

The affinity of this among the *Senebieræ* is doubtless with *S. serrata* of Persoon, from Monte Video, and figured in Delessert's Icones, v. 2. t. 71. But that is thrice as large in all its parts, and the leaves are spathulate and serrated, quite unlike those of the present plant, which I have only seen in collections from Mr. Tweedie, gathered as I infer from his notes, in Patagonia.

TAB. XX. Fig. 1. Flower. *f.* 2. Stamens. *f.* 3. Ripe silicula. *f.* 4. The same with the valves separating. *f.* 5. cell laid open. *f.* 6. Embryo removed from the seed:—all more or less *magnified.*

Enumeration of FUNGI, *collected by* HERR ZEYHER *in* UITENHAGE; *by the* REV. M. J. BERKELEY, M.A. F.L.S.

(*With a Plate.*—TAB. XXI.)

The collection placed in my hands by Sir W. J. Hooker, to whose extensive herbarium it forms a most valuable addition, though not large, is extremely interesting, not only from the rarity or beauty of particular species, but from its general character. From the nature of the case, a collection of this description, especially where the principal object has not been to obtain cryptogamic plants, cannot be regarded as at all perfect; but as the specimens seem evidently to have been collected as they came under notice, without any regard to size or beauty, they may be considered as in some measure indicating the nature of the mycological productions of the country.

Taking the order *Hymenomycetes* in its largest sense, as comprising *Lycoperdaceæ*, the mass of the species belongs to it. Indeed four species only belong to other orders, viz: a *Peziza*, a *Sphæria*, and two *Epiphyllous parasites.* It is remarkable that there is not a single *Sphæria* of the tribe *Hypoxylon*, which one would certainly expect to be represented by at least some one of those species which are cosmopolites. I am the more inclined to think that the collection is indicative of the real character of the mycologic Flora, because Mr. Harvey has informed me, that in the neighbourhood of the Cape he observed nothing but what appeared to him to be European forms.

Of the *Hymenomycetes,* the greater part belong either to the genus *Agaricus,* or to the *Lycoperdonaceous* tribe. There are but four, or at most five *Polypori,* one of which is a perfect *Proteus.* The *Lycoperdons* are most interesting, belonging to many genera and presenting two at least which are new. *Batarrea, Tulostoma,* and *Mycenastrum,* are represented by European species. *Lycoperdon,* by a variable, but beautiful new species and by the common *L. gemmatum. Podaxon* by the old species *P. carcinomatis.* Besides these, there is the curious *Secotium Gueinzii, Kze,* (see p. 200, Tab. V. of the present volume,) and two species which I have been obliged to refer to two new genera. *Polyplocium inquinans,* (see p. 202, Tab. VI. VII. of the present volume), is not in the collection, but it must be regarded as another characteristic of South African Mycology. It is curious that the genus *Geaster* does not appear in the collection, nor *Scleroderma. Bovista* is replaced by *Mycenastrum,* which is the more interesting, as belonging to a species or group of species hitherto but little understood, though probably, now Desvaux has called attention to it, it may be found to be more common than might be supposed from the imperfect notices hitherto recorded.

I have already pointed out in this Journal the importance of the genus *Secotium* as connecting some of the *hypogæous Fungi* with *Lycoperdonaceæ.* Other points will be found under the respective species of which I proceed to give an enumeration.

1. Agaricus (Lepiota) *Zeyheri,* n.s.; pileo amplo carnoso molli umbonato; epidermide superne in verrucas minutas deorsum in areolas subsquamosas diffracta; stipite cavo lævi immaculato bulboso; annulo mobili crasso membranaceo-marginato persistente; lamellis remotis e sporis alutaceis. *Zeyher,* N°. 92.

Uitenhage. On sandy ground. January.

Pileus 6 inches across, at length somewhat expanded with a broad obtuse umbo and incurved, white tinged with brown in the centre; epidermis smooth at the margin, then cracked into areolæ, which, towards the umbo, become minute conical warts; flesh thick.

Stem 7 inches high, $\frac{3}{4}$ of an inch thick in the centre, running up into the flesh of the pileus, white, nearly smooth; equal, or nearly so, above, bulbous below, hollow but stuffed with a few fine fibrillæ. Bulb $1\frac{1}{2}$ inch thick, not marginate. Ring large, thick, persistent, moveable with a membranaceous margin.

Gills perfectly distinct from the stem, broad, tan-coloured from the spores, which are rather large, elliptic, with a distinct pellucid border. They are colourless when seen by transmitted light, but tan-coloured in situ.

This magnificent species is closely allied to *Ag. procerus*, but differs in many essential points, especially in the tan-coloured spores. Several fine species of the section occur in the southern hemisphere. Amongst Mr. Bauer's drawings, in the possession of Mr. Brown, are representations of two singular and beautiful species, and Sir W. J. Hooker has a very curious one from New Zealand, which I shall hope to describe at some future opportunity.

2. Ag. (Collybia) *chortophilus*, n. s.; pileo convexo-plano carnosulo subtiliter atomato-pruinoso demum glabro; stipite brevi gracili farcto pruinoso-tomentoso; lamellis distantibus latiusculis crassiusculis longe decurrentibus interstitiis poroso-venosis. *Zeyher*, n. 108.

At the base of grass stems which are immersed in sand. Uitenhage. January.

Pileus $\frac{5}{17}$ of an inch broad, plano-convex, slightly fleshy, with the margin very thin and acute; when dry, of a pallid ochre, like *Ag. oreades*. Stem about half an inch high, half a line thick, rooting below, stuffed, at length hollow, clothed with pruinous down, of the same colour as the pileus. Gills at length of a rich rufous-brown with a pale edge, rather broad in the centre decurrent, and extremely narrow at the base, where they are mere lines; interstices poroso-rugose. Sporophores oblong, swollen above; spicules rather long; spores subglobose.

This species has the habit of *Ag. stipitarius* and *graminicola.* It is not, however, closely allied to the former, though belonging apparently to the same section of the sub-genus *Collybia.* It is rather rigid when dry, and the gills have a very peculiar appearance, like that of the hymenium of some *Merulii,* as if, when fresh, they were inclined to be gelatinous.

3. Ag. (Collybia) *omotrichus,* n. s.; pileo hemispherico demum plano subcarnoso pilis brevibus radiantibus mollibus fasciculatis vestito, glabrescente; stipite gracili velutino coriaceo; lamellis distantibus leviter adnexis crassiusculis. *Zeyher,* n. 111.

Upon the hard stems of decayed grasses. Uitenhage. December.

Pileus ¼ of an inch broad, at first rising from the matrix like a little stemless velvety ball, at length expanded and nearly plane, papillate, more or less zoned, subcarnose, clothed with short soft radiating somewhat fasciculate hairs, which almost vanish in old specimens. Stem ½-¾ of an inch high, ¾ of a line thick, straight, velvety, solid, coriaceous, consisting of white, shining, silky fibres. Gills distant, slightly ventricose, narrow behind, ochraceous, slightly adnexed.

Extremely like *Ag. stipitarius,* var. *graminicola,* of which it has precisely the habit, but it is certainly distinct, being far more fleshy, and the pubescence has a very different appearance. The colour of the pileus and stem, in the dry plant, is a pallid fawn-colour. I have not been able to find spores, but believe that they are white, though the gills are of a dirty ochre. It resembles also very closely *Ag. graminicola,* Nees, a ferruginous seeded species, which I know only from Nees' and Krombholz's figures. I have never, however, seen any dark-seeded Agaric with a stem of a similar texture.

4. Ag. (Omphalia) *umbelliferus.* Linn. var. *cinnabarinus. Berk. Zeyher,* n. 46.

On earth. Uitenhage. June.

It is very possible that this may be a new species; but if so, certainly very closely allied to *Ag. umbelliferus.* There are but two specimens in the collection, and those not in very good order. When fresh, it is vermillion-coloured.

Pileus $\frac{1}{3}$ of an inch broad, umbilicate. Gills distant decurrent. Stem $\frac{1}{2}$ an inch high, attenuated at the base.

5. Ag. (Naucoria) *semiorbicularis,* Bull. *Zeyher,* n. 105.

Uitenhage. On cowdung. January.

I have compared the specimens with individuals dried purposely in the same way, and find scarcely a difference.

6. Ag. (Naucoria) *arenicola,* n. s.; pileo hemispherico subcarnoso glabro; stipite gossypino-farcto basi clavæformi radicante; lamellis subargillaceis latis planis dente decurrente. *Zeyher,* n. 110.

On sandy ground. Uitenhage. December.

Pileus $\frac{1}{2}$ an inch broad, perfectly hemispherical, obtuse, without any umbo smooth subcarnose. Stem $1\frac{1}{2}$ inch high, scarcely 1 line thick, nearly equal, except at the base, where it is slightly incrassated, and roots amongst the sand, collecting a little ball about it; smooth, strongly grooved, after the manner of its allies, when dry, stuffed with a delicate cottony substance, like the pileus of a pallid ochre. Ring none. Gills very broad, nearly plain, adnate, with a decurrent tooth clay-coloured. Spores elliptic, pale yellow-brown.

Closely allied to *Ag. Vervacti* and *arvalis,* but differing from both.

The figure quoted by Fries from Paulet, under *A. Vervacti,* gives a tolerable notion of its general appearance.

7. Ag. (Naucoria) *furfuraceus. Pers. Zeyher,* n. 107.

On the bare ground. Uitenhage. January.

8. Ag. (Galera) *peroxydatus,* n. s.; pileo campanulato subhemispherico umbone apiculiformi membranaceo sicco ruguloso; stipite tenuissimo delicato deorsum subarcuato glabro;

lamellis distantibus ascendentibus subangustis adnatis non ventricosis 2 sporidiis laterinis *Zeyher*, n. 109.

On the bare ground. Uitenhage. January.

Pileus $\frac{5}{17}$ of an inch broad, campanulate, subhemispherical, with a minute umbo, rugose when dry, dull red brown. Stem 1½ inch high, fistulose, rather curved at the base, nearly equal, very slender, smooth. Gills ascending, narrow, very slightly if at all ventricose, adnate, covered with elliptic, bright red rust-coloured spores, which when seen by transmitted light, are of a beautiful golden hue.

This species belongs to the same group as *Ag. sparteus*, like which it resembles the bryogenous section. Schæffer's figures of *Ag. mniophilus*, with the exception of 4-6, exactly express the habit. From *Ag. sparteus* it differs in its narrow, ascending distant, not close and plain, gills. The colour of the spores is very beautiful, when seen by transmitted light. When lying on the gill they are of a rich red brown, like that of peroxide of iron.

9. Ag. (Psalliota) *pratensis*, *L. Zeyher*, n. 93.

Var. *australis*, Berk. stipitibus connatis, pileo verrucoso-rimoso; annulo appendiculato.

On the ground. Uitenhage. January.

A very splendid variety, if indeed it be merely a variety. The pileus is cracked into large polygonal warts. The stems are more or less fasciculate, and the ring attached in fragments to the edge of the pileus. The spores are larger than in the specimen referred to *Ag. arvensis*, and darker.

10. Ag. (Psalliota) *arvensis*, Schæff. *Zeyher*, n. 95.

Var. *grossus*, Berk. stipite brevi obeso; annulo erecto; pileo glabro valde carnoso; lamellis angustis attenuatis subremotis.

On the ground. Uitenhage. February.

The flesh in the only specimen contained in the collection is remarkably thick; the gills very narrow and quite free, almost as in *Ag. cretaceus*, the stem short and blunt; the ring erect towards the top of the stem. A doubt again may be expressed as to the propriety of referring this to *Ag. ar-*

vensis, but I am unwilling to propose new species in so variable a section on insufficient grounds, and prefer indicating the affinities.

11. Ag. (Psalliota) *cretaceus*, Fr. *Zeyher*, n. 112.

On the ground. Uitenhage. January.

Of this there is but a single specimen, which though in bad condition, appears certainly referable to *A. cretaceus.*

12. Ag. (Coprinus) *ephemerus*, Bull. Ag. momentaneus, *Bull. tab.* 128. *Zeyher*, n. 113.

Uitenhage. On the ground. January.

The specimens appear certainly referable to this species. They resemble very closely the figure of Bulliard, and accord with the characters. I think it best, however, to add a description drawn up from the South African plant.

Pileus 1 inch broad, campanulate, very delicate, sulcate, grey with a red brown tinge in the centre, which is very thin, but not umbilicate or depressed, smooth, with a few minute white furfuraceous scales. Stem 1½ inch high, quite smooth, except at the base, extremely delicate and slender. Gills distant, very slightly ventricose, free behind, or slightly adnexed, not forming a distinct space round the top of the stem. Spores much longer than in *Ag. plicatilis*, without any distinct apical point.

Two other Agarics occur in the collection which appear to be *Ag. piperitus*, n. 100, and *Ag. melleus*, n. 96, but they are in too bad a state to speak with any certainty.

13. Lentinus *capronatus*, *Fr. Ep.* p. 389. Ag. strigosus, *Pers. in Freyc. Voy. t.* 2. *f.* 3. *Zeyher*, n. 104.

"Upon dry wood of *Portulacaria afra.*" Uitenhage. December.

Pileus 1 inch or more broad, umbilicato-infundibuliform, bay-brown, sometimes mottled as if squamose, sometimes zoned, sprinkled with scattered fascicles of straight, short, rigid bristles. Stem ¾ of an inch high, scarcely two lines thick, equal, except at the base, where it is slightly thickened, bay-brown like the pileus, clothed with short somewhat fasciculate bristles; white within, at first solid, at length somewhat hollow, sometimes connate. Gills narrow, torn, decurrent, all ending at the same point, somewhat anastomosing, interstices reticulate rather dusky.

A small species resembling most *Lentinus strigosus*, from which, however, it is very distinct.*

14. Pol. *lucidus, Fr. Zeyher*, n. 91.

On the stems of *Acacia horrida*. Uitenhage. January. Exactly the form which occurs in Great Britain.

15. Pol. *sanguineus*, *Fr. Zeyher*, n. 97.

On decayed stems of *Aloe Africana*. Uitenhage. January. The specimens approach very near to *Pol. cinnabarinus*, and are absolutely stemless. I have exactly the same state from Cuba, communicated by Dr. Montagne.

16 Pol. (Apus) *Proteus, Berk.*

Pileo coriaceo subtenui conchiformi subflexili sessili reniformi, integro lobatoque basi plus minus effusâ subzonato umbrino-fusco pallescente velutino-hispido, vel fasciculato-setoso; intus subconcolori; poris mediis rotundatis vel elongatis, dissepimentis tenuibus, acie subæquali. *Zeyher*, n. 116, 119, 117.

Upon decayed wood, in the forests near Uitenhage. March, April.

Pileus 3 inches broad, 2 inches long, in its most perfect state conchiform, and more or less reniform with the base effused, but often almost resupinate, with the margin only reflected and then much lobed, varying greatly in appearance, being sometines clothed with a rather rigid velvety down, sometimes scabrous or hispid with strong short bristles, composed of fascicles of hairs with a few faint zones, which in the velvety specimens, are entirely wanting; margin thin, sometimes extremely acute. The colour varies from a rich umber brown to pale dull fawn colour; the texture is always brownish fawn-coloured. Pores middle-sized, $\frac{1}{60}$ of an inch broad, roundish, or by the absorption of the dissepiments, elongated, fawn-coloured; dissepiments thin, with their margin nearly even. Little granular bodies are often attached to them, but they are possibly extraneous.

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* Since the above was written, I have seen the original specimen of Persoon, at Paris, which proves distinct. The present species, therefore, may be named L. Zeyheri, Berk.

Var. *imbricata;* imbricata, pileo tenui coriaceo flexili velutino-villoso vel spongioso rarius fasciculato-piloso. *Zeyher,* n. 118, 120.

On decayed wood, in the forests near Uitenhage and Zwart Kops River. March.

At first sight, very different from the more normal form, but varying as greatly in the nature of the pubescence, which is villous or spongy, or fasciculato-pilose. The pilei scarcely exceed an inch in breadth. The substance is of the same colour but is rather softer, though it varies also in this respect.

No species can be more variable than this. It would be easy to make several species, but whatever difference there may be in the surface of the pileus, the form, thickness, and density, there is none in the pores or the colour of the substance. The two forms described as a variety are most different; but these are so connected with the others, that it seems impossible to make more than one species. The differences arise probably from the situation in which they were developed. Its nearest ally appears to be my Pol. Zeylanicus.

17. Pol. (Apus) *isidioides,* n. s.; pileo suberoso-lignoso uniformi convexo duro gilvo-ferrugineo margine subtiliter velutino ruguloso, postice setoso-scaberrimo; intus rhabarbarino; hymenio plano cinnamomeo; poris minutissimis punctiformibus. *Zeyher,* n. 115.

Upon trees, in forests near Uitenhage. March.

Pileus 3 inches broad, 2 long, reniform, convex above, plane below, stemless, of a rich ferruginous reddish grey, hard and woody, very obscurely zoned, minutely rugulose, and velvety towards the margin, with occasionally smooth, brown, shining, darker zones behind, remarkably scabrous, with elongated bristly nodules; substance hard, rhubarb-coloured. Hymenium cinnamon-coloured; pores very minute, punctiform, rhubarb-coloured within, rather short.

Allied on the one hand to *Pol. gilvus*, which is, however, clearly of a softer consistence, when fresh, like *Pol. dryadeus*, and on the other, to *Pol. Ribis* and *Pol. rubiginous*, Berk.

18. Thelepora *hirsuta*, Willd. *Zeyher*, n. 121, 122.

On decayed and charred wood, in the forests near Uitenhage.

In the specimen n. 121, the hymenium has a cinereous tinge, but I do not consider it distinct. Both, however, are in very bad condition. No. 122 is decidedly *T. hirsuta*.

19. Clavaria *miniata*, n. s.; parva cinnabarina, stipite tenui attenuato in clavulam palmato-subifidam compressiusculam sursum incrassato. *Zeyher*, n. 47.

On sandy ground, amongst minute mosses. Uitenhage. August.

About ½ an inch high. This species resembles most *Clavaria paludicola*, Libert, n. 322, with which it agrees in stature and habit. The colour, however, of that, when fresh, is yellow, and when dry, orange; this, when fresh, is of the colour of cinnabar, and becomes pale when dry. Madame Libert's plant grows on sunny marshes, this on sandy soil. I know of no other species with which it can be compared.

19. Peziza (Al. Humaria) *epitricha*, n. s.; conferta, sessilis; cupulâ planiusculâ utrinque rubrâ extus rugulosâ, fibrillis ramosis fuscis insidente. *Zeyher*, n. 58.

On charred wood. Uitenhage. July.

Cups crowded, "dark red," nearly plane when moist, concave when dry, externally rugulose from the pentagonal cells, seated on a branched, articulated, brown mycelium. Asci filiform, containing eight sporidia, each with two globose sporidiola; paraphyses linear clavate.

This species has the habit of *Peziza brunnea* and *melaloma*, but the external surface of the cups is naked. It has also a great resemblance to *Peziza araneosa*.

20. Sphæria *Graminis*, Pers. *Zeyher*, n. 83.

Var. *Ehrhartæ*, Berk. maculis subrotundis; ascis medio tumidis.

"Upon the leaves of *Ehrharta*." Uitenhage. December.

The form of the asci in the Uitenhage specimens is very different from that of the plant published by Kunze, Libert, and Desmazières, in all of which they are linear, with a single row of sporidia. In the present variety I find the asci clavate, more or less swollen in the centre, and frequently apiculate, with a double row of sporidia. The sporidia are, in both, of the same form, or nearly so, being more or less oblong-ovate. In *Sph. graminis* b. *Poarum*, published by Fr. "*Scler !* n. 282" the asci are much shorter and less truly linear, with the internal sac remarkably distinct. I have not been able in this to detect sporidia. On the whole, then, I consider myself justified in referring the Uitenhage specimens to the plant of Persoon. The specimens published by Mongeot and Nestler, which agree in outward form with the plant of Fries, are an abortive state of *Uredo rubigo vera*. I have not been able to find asci in my specimens of *Sphæria Caricis*, Fr.; the possession of which I owe to the kindness of Dr. Montagne.

21. Batarrea *phalloides, Pers. Zeyher*, n. 114. (Tab. XXI, fig. 1).

On the ground. Uitenhage. April.

I have long since shown reason to doubt whether* *Bat. Gaudichaudii* be really a distinct species from *B. phalloides*. In both the sporidia are, I believe, of the same colour, the stem is traversed by a filamentous cord, and the stem is not entirely confluent with the peridium, but attached only by a portion of its apex. The Uitenhage specimens compared with a very fine specimen of *B. phalloides* in the British Museum, exhibit no difference as to the colour of the sporidia; the only difference I can perceive is that in the exotic specimens the stem is certainly not attached by so large a portion of its apex as in the other. The colour of the sporidia in the European plant is not yellow-brown, as described by Smith but of a fine purple or red brown, like peroxide of iron. Persoon's figure is not original. When I examined Mr. Sowerby's specimen, I had great difficulty in finding any spores or filaments; but both the specimens from Dickson's collection in the British Museum and the Uitenhage specimens, which abound in flocci and spores, exhibit the important fact, that besides the colourless anastomosing flocci, there are others in great abundance, which are simple, extremely brittle, irregular in outline, attenuated, and coloured like the spores, and contain a single spiral filament. This structure must come in aid of the elastic volva, in the rapid evolution of the plant. At present, spiral filaments, as far as I am aware, have been discovered only in *Trichia*, amongst fungi. The younger Hedwig was the first to notice them.

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* I have lately had an opportunity of seeing Montagne's specimens, and think the species distinct, though I am unable to point out the distinctive characters.

Tab. XXI, fig. 1. *a.* filaments and sporidia slightly magnified; *b.* ditto, highly magnified. One of the spiral flocci is represented as springing from one of the colourless threads. This is the only instance in which I observed the mode of attachment.

22. Mycenastrum *corium, Desvaux,* Ann. des Sc. Nat.* vol. 17, p. 147. Scleroderma corium, *Desv. Mem. de la Soc. Imp. de Mosc.* vol. 5, p. 73. *Zeyher,* n. 90. (Tab. XXII, fig. 2).

In forests near Uitenhage. January.

This curious fungus resembles, at first sight, *Bovista gigantea,* but the peridium is hard and leathery, above a line thick, and opens ultimately in a stellate form. It springs immediately from the earth, without any root or stem, being perfectly sessile. The capillitium is highly developed, consisting of strong-toothed, much-branched, brown, inarticulate thread, resembling very much, when magnified, some spinulose Alga. The spores are of a rich red brown, and are very minutely echinulate. The flocci, towards the top of the peridium assume a yellowish tinge. The inside of the peridium, as in Fries' *Bovista suberosa,* which is doubtless the same thing, is purplish brown. *Bovista suberosa,* Rostkovius is clearly not the same with Fries' plant.*

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* Since the above was written, M. Desvaux has, at my request, kindly forwarded to me a portion of the capillitium of his plant, which is of a yellow olive, with the spores dark, exactly as in Fries' *Bovista suberosa.* In Zeyher's plant, the capillitium is purple brown, slightly coarser and less prickly than in that of Desvaux, while the spores are larger. In point of structure, both flocci and spores are identical. The Cape species, then, must be distinguished specifically from the European. I propose for it, therefore, the name of *Mycenastrum phæotrichum.* It is characterised by its purple brown flocci.

Tab. XXI, fig. 2. Flocci and sporidia highly magnified. The very young spores have a short peduncle.

23. Lycoperdon *gemmatum, Fr. Zeyher,* n. 102.

On the ground. Uitenhage. December.

24. Lycoperdon *lætum,* Berk.; peridio subcoriaceo rimoso-areolato demum cupulari-aperto; strato sterili stipitiformi celluloso, capillitio sublenticulari subtus excavato sporisque luteis, demum fuligineo-luteis. *Zeyher,* n. 103.

On the ground. Uitenhage. October.

About 1½ inch high, 1¾ broad. Stem ¾ of an inch high, 1 inch thick, obese, incrassated above, consisting of a rigid pale reddish-brown, cellular, spongy substance, externally reddish brown, sulcate, clothed with minute furfuraceous warts; sometimes more or less obsolete. Peridium subglobose or lenticular, pale, coarsely cracked, areolate, at first clothed with short pyramidal warts, at length nearly or quite smooth, opening irregularly. Capillitium sublenticular, hollowed beneath yellow; flocci, pellucid, branched, not rough; spores, minute, globose, perfectly even, with a minute, central nucleus, stemless, or very shortly pedicellate, yellow, in older plants yellow-olive.

This species, which is very peculiar, has more the appearance of a *Scleroderma* than of a *Lycoperdon,* though its structure is that of the latter. It resembles, in some respects, *Lycoperdon cælatum.* The peridium is, however, more rigid, and opens, apparently, not by the mere collapsion of the centre, but by coarse cracks. It varies with a distinct stem, and one altogether confluent with the peridium; but even then, the distinction between the stem and peridium is marked.

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* I have a specimen of Scleroderma, from Dr. Montagne, with precisely the habit of Desvaux's Mycenastrum. The distinctive characters of the genus must then be taken from the Capillitium. There is a third species from Chili in Dr. Montagne's Herbarium.

In the collection are specimens, marked n. 101, which agree very closely with the foregoing, though with some slight difference. They are much depressed; the stem is little more than rudimentary, though still decided spongioso-cellular, and the mass of the spores is of a greyish tinge, though the form and size are the same. The peridium is not cracked, nor is it apparently warty. The specimens are not in a sufficiently good state to enable me to form any definite opinion about them.

25. Tulostoma *mammosum, Fr. Zeyher,* n. 123.

On the ground, near Koegarivier.

SCOLECIOCARPUS, n. g.

Peridium commune simplex, tenue, membranaceum, apice indeterminate dehiscens. *Peridiola* minuta, irregulariter subcylindrica, gyrosa, tomentosa; sporas longe pedicellatas minutas globosas includentia. Subglobosus, stipite brevi radicato suberoso suffultus.—*Genus* Ciliciocarpo, *Cordæ, proximum, differt peridio communi non evanescenti, peridiolis flexuosis elongatis, sporisque globosis stipitatis aliisque notis.* Nomen dedi ε Σκωληκιον *vermiculus,* et καρπος *fructus.*

26. Scoleciocarpus *tener, n. s. Zeyher,* n. 106. (Tab. XXI, fig. 3).

On the ground. Uitenhage. January.

Stem short, springing from a rather strong attenuated root, white and almost corky within. Peridium depressed subpyriform, ¾-1 inch broad, bursting irregularly above, membranaceous, even subtomentose, ochraceous, very thin and brittle, within smooth, minutely wrinkled, rufous and shining in the upper portion, paler below. Peridiola very minute, subvermiform, tomentose, somewhat gyrose, compound or simple, pale slate grey, filled with minute, globose, smooth spores, each containing a nucleus, and supported by a long more or less flexuous, extremely slender peduncle. These peduncles are sometimes branched.

This very curious fungus resembles in miniature *Polysaccum subarrhizum*, as figured by Scopoli. The genus is, as far as may be judged from Corda's figure and description, allied to *Ciliciocarpus*, but differs essentially in the presence of a distinct membranous common peridium, and the character of the peridiola and spores. The contents of the peridium, at first sight, resemble very much the dung of some minute insect, and the fungus might be passed by in consequence. The structure, however, is very distinct under the microscope.

Tab. XXI, fig. 3, *a*. *Scoleciocarpus tener* nat. size; *b*. ditto, divided vertically; *c*. peridiola magnified; *d*. spores with simple or branched peduncles.

PHELLORINIA, N. G.

Peridium lentum, persistens, suberoso-corticatum, apice irregulariter dehiscens, includens massam conglomeratam sporarum globosarum immixtis floccis paucis hyalinis. *Stipes* validus, cavus, intus materie cartilagineâ vestitus. *Sporæ* flavæ. Nomen dedi ε φελλος *suber*, et ρινος *pellis*.

27. Phellorinia *inquinans*, n. s. *Zeyher*, n. 98. (Tab. XXI, fig. 4).

On the ground. Uitenhage. February.

Stem conical, 2 inches high, more than an inch thick above, irregular, hollow within, and having the cavity lined with a red brown cartilaginous coat, a few fragments of which hang loose from the sides in the cavity, very hard and corky. Peridium depresso-globose, about two inches broad, hard and woody below, like the stem, above tough and flaccid, bursting irregularly, clothed with a thick, interrupted coat of a consistence between spongy and corky, attached in fragments, somewhat after the manner of the bark of *Ulmus suberosa*. A portion of this coat extends down the upper portion of the stem. The peridium, which in parts exhibits a cartilaginous appearance, like that of the lining of the stem, is filled with a closely-packed mass of yellow sporidia, mixed with a few hyaline filaments. Spores globose, with a globose nucleus.

It is unfortunate that I have had an cpportunity of inspecting only a single specimen of this curious fungus, and that rather in an advanced stage of growth. It is so different, however, from any other puff-ball, especially in its hollow stem, that there can be no danger in proposing a new genus for its reception, though the characters assigned are necessarily imperfect, from ignorance of the early condition of the fructifying mass. The colour of the sporidia is like that of some *Polysacca*, but there is no trace of cells; and, indeed, the sporidia themselves do not resemble those of *Polysaccum*. Its true affinities, at present, must remain obscure. It is probable that the fructification will prove of the same nature as that of *Scleroderma*, near to which genus it may fitly be placed. The spores are most abundant, and pollute every thing they come near. The colour of the fungus is yellow from the sporidia, but when fresh, is probably white.

TAB. XXI, fig. 4, *a*. *Phellorinia inquinans*, nat. size, divided vertically; *b*. spores and flocci highly magnified.

28. Podaxon *Carcinomatis*, Fr. *Lycoperdon Carcinomatis*, Linn. Herb. *Zeyher*, n. 99.

On ant-hillocks. Uitenhage. November.

The stem in this species is straight, not twisted. The mass of filaments is covered with a very delicate peridium, distinct from the coarse calyptræform coat. The colour of the sporidia changes extremely as the plant advances to maturity. The portion at the base exposed to light, becomes black, while the portion shaded by the top of the calyptra is yellowish. The shape of the peridium also varies from elliptic to oblong.

The affinities of this and the neighbouring genera have lately been discussed by Dr. Montagne, in a paper read before the Société Philomatique of Paris, April 15, 1843. An abstract of it is given in l'Institut, May 4, 1843, a translation of which is appended to this memoir.

29. Secotium *Gueinzii*, Kze. Berk. in Hook. Lond. Journ. of Bot. vol. 2, p. 200, Tab. V. *Zeyher*, n. 94.

On sandy ground. Uitenhage. December.

30. Æcidium *australe*, n. s.; amphigenum totam superficiem occupans; peridio elongatiusculo dentato-laciniato laciniis siccis convolutis; cellulis laciniarum oblongis coherentibus sporis obovatis subangulatis glabris. *Zeyher*, n. 9. (Tab. XXI, fig. 5).

" Upon leaves of Melolobium." Uitenhage. July.

This species, which belongs to the same group as *Æ. laceratum* and cancellatum, differs essentially in the more irregular spores, in having the peridium very slightly elongated, in the very convolute laciniæ when dry, and their far less elongated cells, which are, besides, quite free from the granular appearance which the border of the cells in those species exhibits, and remain permanently attached to one another.

Tab. XXI, fig. 5, *a*. spores of *Æcidium australe*, highly magnified; *b*. cells of peridium.

31. Uredo *pilulæformis*, n. s.; sporis fusco-nigris irregularibus vel subglobosis rugosiusculis plus minus connatis conglomeratis immixtis minoribus effætis massam compactam non rimosam efformantibus, *Zeyher*, n. 89. (Tab. XXI, fig. 6).

Destroying the germens of some species of *Juncus*. Uitenhage. December.

Resembling very strongly *U. urceolorum*, and, like that, infesting the germen, and forming little globose or elliptic, pill-like bodies, consisting of a compact mass of deep brown, irregular, subglobose, often angular, more or less connate, slightly rupose spores, mixed with smaller globose, sub-elliptic, hyaline bodies, which appear to be abortive sporidia. They become yellow when treated with iodine, and therefore are not fecula. In the centre of the mass, towards the base, there is sometimes a pale clavate columella, extending half way up the mass, but this is not always present. The surface of the mass is not cracked, at least in the specimens before me.

This species resembles very much *U. urceolorum*, but in that the spores are distinct and echinulate, and they are not mixed with abortive spores, or if so, in a very slight degree. The two species are certainly very nearly allied, but are, I believe, distinct.

TAB. XXI, fig. 6. Fertile and abortive spores of *Uredo pilulæformis*, highly magnified.

The following abstract of Dr. Montagne's memoir, entitled "General Observation on the tribe of PODAXINEÆ, and the establishment of a new genus *Gyrophragmium*," belonging to this tribe, will be read with interest in connexion with the present memoir, and a former one on *Secotium* and *Polyplocium*. It is extracted from "l'Institut," May 4, 1843.

After having defined this little group of the order of *Trichogastric Fungi*, remarkable especially for the presence of a columella due to the elongation of the stem into the peridium, the author gives the history of the genera which belong to it, and a general description, in which the peridium, columella, capillitium, and spores are reviewed. The genus *Montagnea*, Fr. (Gener. Hymenomycet, April, 1836, p. 7), of which the termination has been since modified (*Montagnites*, Epicrisis, p. 240), is analysed and defined. Of the three species admitted into the genus by Fries, Dr. Montagne, who communicated two of them, *M. Candollei* and *M. Dunalii* to the author, shows that the first only can continue to form part of it, inasmuch as the second does not belong to the *Agaricineæ*, but to the family of *Gasteromycetes*. Dr. Montagne forms his new genus, *Gyrophragmium*, from this species, *M. Dunalii*, and places it at the head of the tribe *Podaxineæ*. *Gyrophragmium Dunalii*, found at first with *Montagnites Candollei*, on the shore of Maguelone, near Montpellier, received from Prof. Delile the name of *Agaricus ocreatus*. It is, at least, under this name M. Touchy has sent it to Montagne, who communicated it to Fries. More recently, Capt. Durieu found it again in Algiers, from whence he sent specimens, in various stages of growth, which have enabled the author of this memoir to observe the morphosis, and to establish the following points:—1. That what had been taken for the pileus of an Agaric in the upper hemisphere of the peridium, whose lower half surrounds the middle of the stem, under the form of a wide volva. 2. That the supposed gills are true dissepiments, springing from every part of the pileiform portion of the peridium. After a due examination of the different parts of which this curious *Gasteromycete* is composed, the author remarks that it is impossible to leave it in the place assigned to it by Fries, and that it must become the type of a new and very distinct genus, to which, from the peculiar conformation of the dissepiments, he has given the name of *Gyrophragmium.* The following are its characters:

Receptaculum stipitatum. *Peridium* primo turbinatum, dein medio orbiculatim ruptum, superne pileiforme, cum stipite centrali ad apicem usque producto, volvâ amplâ (quæ nihil aliud nisi pars peridii inferior) instructo continuum. *Capillitium* in dissepimenta contextum lamelliformia, subparallela, è peridii toto hemisphærio descendentia, a stipite distantia, in plano ramosa (non autem anastomosantia) sinuosa, plicato-crispata adeoque densata ut sibi cohærere videantur, primo lenta olivacea tandem exavescentia, fragilissima, nigra, subtus libera, labyrinthiformia. *Flocci* liberi nulli. *Sporæ* globosæ, pedicellatæ, dissepimentis affixæ. *Contextus* peridii stipitisque fibrosus, in dissepimenta continuatus.—Fungi *arescentes, persistentes, habitu* Agarico *aut* Boleto *similes, specie volvati aut annulati, stipitati, in arenosis maritimis* Africæ borealis *et* Galliæ australis *hucusque obvii.*

The author then compares this genus with *Secotium,* Kze. and *Polyplocium,* Berk., which have the most resemblance to it, and from this parallel he deduces the affinities and differences.

Before this new memoir on the little tribe of *Podaxineæ,* it was composed of three genera, *Cycloderma,* Klotzsch;

Cauloglossum, Grev.; and *Podaxon*, Desv.; the author adds to it *Secotium*, Kze.; *Polyplocium*, Berk.; and *Gyrophragmium*. He suspects, moreover, that *Montagnea*, which may have been misunderstood by Fries, will one day be placed at the head of this little group. *Batarrea* itself does not appear to him so distant as might at first be imagined. As regards the analogies of *Podaxineæ*, he remarks that *Spumaria* calls to mind *Gyrophragmium*, and that *Æthalium* is celluloso-spongy, as *Secotiam*, &c.; finally, that a columella is found in *Stemonitis* and many other genera.

The memoir closes with the following observations:

" From Mr. Berkeley's researches, it appears that a number of subterranean fungi (*Fungi hypoggæi*), which, from an illusory analogy, had been, without any firm ground, referred to *Tuberaceæ*, belong incontestibly to *Lycoperdaceæ*, and that these, at least relatively to their mode of fructification, are much more near to *Hymenomycetes*, whilst those regarded in the same point of view are nearer to *Discomycetes* of Fries, or Persoon's *Hymenotheca*, since the reproductive bodies being contained in the asci, are real sporidia. The recent labours of Tulasne and Vittadini have confirmed these results, which may now be regarded as decisive.

" If now we review the succession of different forms by which the Fungi of the two families to which the names of *Hymenomycetes* and *Gasteromycetes* have been applied, in their ascending series, it cannot escape notice, that, notwithstanding their apparent differences, the same plan has been followed in their formation, or in other terms, that they have a unity of composition. We observe, however, this remarkable circumstance in their mode as in their degree of evolution, that the one seek the light, under the influence of which the principal phenomena of fructification take place, while the other run through the first or all the phases of their life out of the sphere of action of this powerful agent; that is to say, that they ripen their spores in a closed receptacle, and that this opens, usually, only at the moment of dissemination.* The evolution of the latter is then, we see, of a lower grade to that of the former. But in comparing *Gyrophragmium*, especially with an Agaric, it is easy, nevertheless, to comprehend the perfect analogy which exists between the two series, examined towards their culminating point. The resemblance would be more striking still, and almost complete, at least as far as outer form is concerned, if it should appear hereafter that *Montagnites* also belongs to *Gasteromycetes*, as may be fairly suspected from its resemblance to *Gyrophragmium*. Then the simplicity and independence of the dissepiments, carried to the highest degree, since like the gills of an Agaric, being fixed to the summit of the stem by a single point, frequently by a short thread, they radiate horizontally; then, I say, this independence and simplicity would raise the *Gasteromycetes* to the same rank as the *Hymenomycetes*, their morphosis only excepted, which every one knows to be very different."

Contributions towards a Flora of South Africa. *By* Dr. C. F. Meisner.

Continued from p. 105.

Rosaceæ.

1. *Rubus rosæfolius, Sm.* DC. prodr. 2, p. 556.—Secus rivulos ad rad. Montis Tafelberg (III, D, b.), July, 1838. Dr. Krauss, n. 1200.

2. *Rubus pinnatus, Willd.* DC. l. c. Cham. et Schl. in Linnæa 2, p. 19.—Ad rivulos planitiei Capensis (III, E. b.), Sept. 1838. Krauss, n. 1201. *R. heterophyllus*, E. Meyer! in Hb. Drège, is very near this species, but differs in having the leaves pubescent underneath.

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* Even this point is, perhaps, not so strong as it appears at first sight, because the sporidia are perfected in many Agarics before the rupture of the ring or volva.—M. J. B.

3. *Agrimonia Eupatorium,* L.—Ad sylvarum margines terræ Outeniqua. (IV, C. b.), Febr. 1839. Dr. Krauss.

4. *Cliffortia odorata,* Linn. fil. DC. prodr. 2, p. 595.—Ad rivulos in Outeniqua (IV, C. b.), Feb. 1839. Krauss, n. 1202. Planta masc.

5. *C. filifolia, Linn. fil.* DC. l. c. p. 596.—In solo lapidoso-arenoso ad latera montis Duyvelskop, distr. George (IV, A,), Feb. 1839. Krauss, n. 1204. Stirps mascula.

6. *C. laricina, E. Mey.* ms. in Hb. Drège.—*var. longifolia,* nob.—In solo lapidoso prope Caledon (IV, B. b.), Dec. 1838. Krauss, n. 1203. Pl. fœminea.—Our plant agrees with Drège's in every point, except in having the leaves nearly twice as long; but whether this be sufficiently distinct from *C. filifolia,* to which it bears the strongest resemblance, I do not venture to decide, never having seen the fruit of the latter. In our specimens, it is 2 lines long (thrice the diameter), and marked with longitudinal ribs, which are more prominent at both extremities than in the middle.

7. *C. ericæfolia,* Linn. fil. DC. l. c.—In arenosis prope Constantiam (III, D. b.), Sept 1838. Krauss, n. 1209. Stirps masc.—Our plant is exactly the same as "*C. teretifolia, Thunb.? var. tenuior*" E. Mey.! in Herb. Drège, but having the leaves carinato-complicate, not terete; and Thunberg's plant being most likely not distinct from that of Linnæus, the name given by the latter author merits to be retained as most applicable to the plant in question.

8. *C. eriocephalina, Cham.* in Linnæa 6, p. 349.—In arenosis planitiei Capensis (III, E. b.), Sept. 1838. Krauss, n. 1211. Pl. masc.

9. *C. falcata, Linn. fil.* DC. l. c. E. Mey.! in Hb. Drège. —Cum præcedente. July, 1838. Krauss, n. 1212. Pl. masc.

10. *C. ternata, Linn.* fil. DC. l. c.—*C. polygonifolia,* E. Mey.! in Hb. Drège. Cum præced. Sept. 1838. Krauss, n. 1210.

PORTULACEÆ (Mollugineæ).

1. *Psammotropha androsacea, Fenzl.* (? Ginginsia glaucescens, E. Mey. in Hb. Drège.)—Inter rupes in summitate Mont. Tafelberg prope Port Natal (V. c.), Jan. 1840. Krauss, n. 4.

SAXIFRAGACEÆ (Cunonieæ).

1. *Cunonia Capensis, Linn.* DC. prodr. 4, p. 12.—In declivitate Montis Tafelberg (III, A. e.), April, 1838. Dr. Krauss.

UMBELLIFERÆ.

1. *Hydrocotyle Caffra,* n. sp.; glabra, foliis peltatis transverse ovali-orbiculatis, petiolo vix longioribus, 12-nerviis, margine circumcirca inciso-lobatis, lobis brevibus latis subæqualibus obtusiuscule 3-4-dentatis; pedunculis petiolo duplo longioribus umbellæ radiis aliis unifloris, aliis longioribus umbelluliferis; fructu late orbiculari, vix emarginato, utrinque leviter 3-costato.

In solo argillaceo-arenoso circa Port Natal (V. c.) Nov. 1839, legit Dr. Ferd. Krauss, n. 127.

This species comes very near *H. Bonariensis,* Lam. and *H. petiolaris,* DC. (prodr. 4, p. 60), but cannot be united with either of them. From both it is easily distinguished by its inflorescence, all the flowers being decidedly pedicellate, with the longer radii of the umbella are terminated by a simple umbellula, instead of bearing one or two distant whorls of subsessile flowers. From the latter species it differs, besides, in the length of its petioles and peduncles, in the form of the leaves (which are even more strongly doubly-crenate than in *H. Bonariensis*), and in the fruit. Moreover, there is, at the base of the general umbella, and of the umbellulæ, an involucre of several narrow lanceolate leaflets, nearly as long as the pedicels, of which I can find no trace in my Brazilian specimens of *H. Bonariensis.*

2. *H. interrupta, Muhlenb.* DC. prodr. 4, p. 59.—*H. verticillata,* Thunb. Diss. 2, p. 415, t. 3!—In humidis ad flum. Knysna, distr. George (IV, C. b.), Jan. 1839. Krauss, n. 1175.

3. *H. ficarioides, Lam.* dict. 3, p. 153 (descr. optima!) DC. l. c. p. 63. Ecklon et Zeyh. enum. p. 331.—In planitie Capensi (III, E. b.), June, 1838. Krauss, n. 1176.

4. *H. eriantha, Rich.* DC. l. c. p. 64.—In sylvis primitivis terræ Outeniqua (IV, C. b.), Jan. 1839. Krauss, n. 1177.

5. *H. calliodus Cham. et Schl.!* in Linnæa 1, p. 371. DC. l. c. (fide specim. authent. e Museo Reg. Berolin.!)—In arenosis prope Gnadenthal (IV, A.), Nov. 1838. Krauss, n. 1178.

6. *H. tridentata, Linn. fil.* DC. l. c. p. 68.—In arenoso-lapidosis montium prope Gnadenthal (IV, A.), alt. 2000 ped., Dec. 1838. Krauss, n. 1174.—nec non in graminosis ad atera mont. Tafelberg prope Port Natal (V. c.), Oct. 1839. —Our specimens, having the leaves broader than figured in Thunb. diss. 2, t. 3, approach somewhat to *H. triloba,* Thunb.

7. *H. virgata, Linn. fil. α. glaberrima,* DC. l. c. p. 69. Ad latera montium Baviaanskloof, alt. 1000-2000 ped. (IV, B. b.), Dec. 1838;—in lapidosis secus rivulos prope Uitenhage (IV, C. c.), April, 1839;—ad rad. montium Outeniqua, distr. George (IV, C. b.), Feb. 1839. Krauss, n. 1170-1172. *δ nana,* DC. l. c. Ad latera montis Duyvelsberg (III, A. e.), Jul. 1838. Krauss, n. 1173.

8. *Sanicula Europæa, L. β. Capensis,* Cham. et Schl. in Linnæa 1, p. 253. DC. l. c. p. 84.—In sylvis primitivis ad flum. Knysna, distr. George (IV. C. b.), Jan. 1839. Krauss, n. 1193.

9. *Apium graveolens, L.* DC. l. c. p. 101.—Ad rivulos in Zitzikamma (IV. C. b.), Mart. 1839. Krauss, n. 1198, 1199,— et in paludibus prope flum. Umlaas, Port Natal (V. c.), Dec. 1839. Krauss, n. 187.—I suspect *Helosciadium Ruta,* DC. l. c. p. 106, an imperfectly known Cape plant, to be a mere form or variety of *Apium graveolens,* with which, indeed, the

diagnosis agrees perfectly well, and perhaps *Smyrnium laterale*, Thunb. fl. Cap. p. 254, DC. l. c. p. 248, may be in the same case.

10. *Petroselinum humile,* n. sp., glabrum, caule erecto, e basi ramoso, subangulato-costato; foliorum laciniis acutis, margine minutissime scabriusculis, inferioribus cuneatis pinnatim 3-5-fidis, superioribus integris; umbellis terminalibus, demum lateralibus oppositifoliis, pedunculatis, folium æquantibus; involucro obsoleto v. nullo; involucelli foliolis linearibus acutis, pedicellos æquantibus, paucis, persistentibus.

Inter arundines in planitie prope Port Natal (V. c.) Oct. 1839, Krauss, n. 418.

A small herb, scarcely 6 inches high, with a simple, perpendicular, thin root. The leaves are like those of *Scandix Cerefolium,* and the asperity of their margin and middle nerve is imperceptible to the naked eye. The inflorescence is the same as in *Apium graveolens,* except that the umbellæ are stalked and furnished with involucres. The fruit is a little smaller than that of *Petroselinum sativum,* but entirely of the same form and structure, having in each vallecula one vitta, and two strongly marked ones on the planum commissurale.

11. *Sium* (*Berula*) *Thunbergii,* DC. prodr. 4, p. 125. E. Mey.! in Hb. Drège.—*S. angustifolium,* Thunb. Un. itin. in pl. Ecklon, n. 69 !—Ad rivulos in Zitzikamma (IV. C. b.), Mart. 1839. Krauss, n. 1197. Seekuhvallei, Ecklon.

12. *Bupleurum difforme, Linn.* DC. l. c. p. 134.—Inter rupes ad latera collium in Langekloof (IV. B. b.), Mart. 1839. Dr. Krauss.

13. *Heteromorpha collina, Eckl. et Zeyh.* enum. p. 342.—Ad flum. Notzinakamma, distr. George (IV. C. b.), Jan. 1839. Krauss, n. 1189. Ecklon's plant we have not seen, but his diagnosis agrees perfectly with our specimens. From *H. arborescens,* Cham. et Schl. this species is easily distinguished by its constantly mucronate leaves, which in the other, are simply acute or even obtuse, and by the shorter and more numerous radii of the umbella.

14. *Lichtensteinia pyrethrifolia, Cham. et Schl.* DC. prodr.

4, p. 135. (excl. syn.)—In graminosis prope flum. Umlaas, Port Natal (V. c.), Dec. 1839. Krauss, n. 196.

15. *L. inebrians, E. Mey.!* in Hb. Drège.—*Œnanthe inebrians,* Thunb. Fl. Cap. p. 252 (descr. bona).—? *Lepisma paniculatum,* E. Mey. MSS. in Hb. Drège (which, according to the specimen I have seen, I cannot distinguish from *L. inebrians*).—Ad rivulos prope Gnadenthal (IV. A.) Dec. 1838. Krauss, n. 1180.

This plant is widely different from *L. pyrethrifolia,* especially in the foliage; Thunberg's synonym, therefore, cannot belong to the latter, to which Sprengel and De Candolle had referred it, its description agreeing scarcely with it, whereas it answers perfectly our *L. inebrians.*

16. *Œnanthe filiformis, Lam.* DC. l. c. p. 139, E. Mey.! in Hb. Drège.—In summitate montium prope Gnadenthal (IV. A.), Dec. 1838. Dr. Krauss.

17. *Fœniculum ? Kraussianum,* n. sp., caule tereti pedunculisque dense minuteque puberulis; foliis inferioribus reniformibus, petiolo vix longioribus utrinque puberulis, subduplicato-serratis, serraturis grossis acutis, superioribus sensim angustioribus 3-lobis, lobis subintegris; umbellis 10-12-radiatis, involucro 1-phyllo, involucellis oligophyllis, fructibus ovalibus.

In planitie prope Port Natal (V. c.), Nov. 1839. Krauss, n. 140.

This plant has some resemblance with *Pimpinella cordata,* E. Mey.! in Herb. Drège, which, however, differs in its long and filiform petioles and smooth serrulate leaves. The seeds of our specimen not being ripe, I am uncertain as to the genus to which it belongs. The general form of the fruit is rather that of a *Pimpinella* than of a *Fœniculum;* but its prominent, almost winged juga, remove it decidedly from the former genus to the latter, with which they agree quite well. The vittæ, too, as far as I could perceive, are those of a *Fœniculum,* viz. one in each vallecula, and two on the planum commissurale. Root simple, fusiform. Stem round, faintly striated, about 18 inches high, erect, divided from its middle into a few simple branches which bear but one or two small leaves, and terminate with an umbella. Petioles foliaceous, almost 3 lines broad on their whole length, canaliculate. Lamina of the inferior leaves broader than long (12-16 lines to 8), with a deep and broad sinus; the superior ones longer than broad, cordato-ovate; the uppermost deeply 3-lobed, segments acute, the terminal one obovate, cuneate, 3-fid, or entire, the lateral ones oblong or lanceolate, entire, or with one lateral tooth. Foliole of the general involucre linear, acute, half as long as the radii of the umbella; involucels formed of 2 or 3 similar leaves, as long as the pedicels. Petals pale yellow? or white, orbicular, with an inflexed narrow acute point. Fruit (not yet ripe), almost as broad as long. The rest as in *Fœniculum.*

18. *Seseli* (*Hippomarathroides*) *Caffrum*, n. sp.; glaberrimum, caule tereti, stricto, striato, superne pauciramoso subaphyllo; foliis radicalibus bipinnatipartitis, segmentis cuneatis pinnatifidis et inciso-dentatis, dentibus mucronato-acutis, summis ad vaginam latam mucronatam redactis; involucro 2-phyllo, involucelli cupuliformis semi-5-6-fidi laciniis acutis; umbellæ radiis longis, gracilibus, pedicellis involucellum vix triplo superantibus.

In graminosis circa Port Natal (V. c.), Aug. 1839. Krauss, n. 403.

The habit, and especially the leaves, are very like those of *Peucedanum Oreoselinum,* and therefore quite distinct from the other species of this section of *Seseli* hitherto described. The radii of the terminal umbella are nearly three inches in length, whereas those of the umbellulæ scarcely exceed 4 or 5 lines. The two oval or oblong and obtuse folioles of the involucre are unequal, 1-2 lines in length, spreading, and whitish, membranous, resembling the uppermost vaginæ. The involucella are calyciform, similar to those of *S. Hippomarathrum,* but more deeply cleft, and their lobes broad, triangular, or ovate, thinly membranous, and white. Fruit quite smooth.

No. 433 of Krauss' collection, gathered on the Table Land, near Port Natal, at an elevation of 2000—3000 feet, is probably a new species of *Seseli*, with yellow flowers and filiform leaves, the inferior of which are divided into three segments, the upper ones quite entire; but the specimens are too young and imperfect to be exactly determined. They agree tolerably, especially in the long involucre, with Thunberg's description of his *S. filifolium*, (Oenanthe filiformis Lam.) except in the inferior leaves.

19. *Heteroptilis arenaria, E. Mey.!* in Hb. Drège, nov. gen. Calycis margo acute 5-dentatus, dentibus persistentibus. Petala elliptica cum lacinula inflexa canaliculato-lineari acuta. Fructus suborbicularis, sectione transversali ellipticus, mericarpia a dorso compressa, jugis 5 membranaceo-alatis, lateralibus marginantibus late alatis dorsalium uno v. duobus ala multo angustiore præditis; valleculæ omnes 1-vittatæ, commissura 4-vittata; carpophorum adnatum. Herba glaberrima, glauca; caule erecto ramoso, tereti, acute sulcato-striato; foliis carnosulis, bipinnatisectis, segmentis 3-4-jugis, lacinulis oblongis obtusis paucidentatis v. integris; petiolo basi breviter vaginante; umbellis terminalibus solitariis, multiradiatis; involucro et involucellis polyphyllis, foliolis brevibus linearibus; floribus parvis albis, fructu magnitudine *Æthusæ Cynapii.* Genus e tribu *Angelicearum*, *Selino* proximum, sed calyce, petalis, fructus jugis dorsalibus inter se inæqualibus et commissura (ni fallor) 4-vittata bene distinctum.

In collibus arenosis prope Zwartevallei, distr. George (IV. B. b.) Krauss, n. 1196.

The habit of the plant is rather that of some species of *Seseli*, than any of the *Angeliceæ*. Dr. Meyer having not yet, as far as we know, characterized this genus, we give a short description of it, taken from our specimens which agree entirely with Drège's plant. The fruit, however, being not quite ripe, leaves us some doubts as to the exact nature of the carpophorum and to the number of vittæ commissurales.

20. *Peucedanum capillaceum, Thunb,* DC. prodr. 4. p. 178. —Secus rivulos ad latera montium Baviaanskloof, alt. 1000 ped. (IV. B. b.) Dec. 1838. Krauss, n. 1188.

21. *P? elongatum, E. Mey. !* in Hb. Drège; glaberrimum, caule subsimplici, tereti, striato, folioso; foliis tripinnatisectis, rigidis, segmentis angustissime linearibus sulcatis; involucri utriusque foliolis filiformibus; mericarpiorum jugis dorsalibus obsoletis, lateralibus in marginem subincrassatum obtusiusculum confluentibus.

Ad latera montis Tygerberg, alt. 1000 ped. (III. D. a.) Nov. 1838. Krauss, n. 1181.

From *P. capillaceum,* to which this species is nearly akin, it is easily distinguished by its stem being rather thickly covered with leaves, which are longer, less divided and with no true petiole, the broad, emarginate vagina reaching up to the very origin of their lowest segments. All our specimens, from Drège as well as Krauss, have but imperfect fruits. The flowers seem to be pale yellow. Other specimens, gathered by Dr. Krauss on hills near Knysna River, distr. George (IV. C. b.) in Jan. and Febr. 1839, (n. 1182) differ from the former only in the segments of the leaves being shorter and the stem of a dark purple colour.

22. *P. abbreviatum, E. Mey.* l. c.—In summitate montis Tafelberg (III. A. e.) Mart. 1840. Krauss, n. 1179. Ecklon, Un. itin. n. 563! The specimens are too imperfect to enable me to draw from them a diagnosis of this species, which, to my knowledge, has not yet been characterised. In general habit it comes near *P. elongatum;* but the segments of the upper leaves are shorter and serrate, still more rigid, somewhat falcate, not so distinctly sulcate, and of a pale (perhaps glaucescent?) colour, and those of the lowermost leaves are lanceolate (about 3 lines broad) and inciso-serrate. They have, moreover, a distinct petiole, which gradually dilates, only at the very base, into a short half embracing vagina.

23. *P. virgatum, Cham et Schl.* DC. prodr. 4. p. 178.—*Dregea virgata,* Eckl. et Zeyh. enum. p. 351.—Ad sylvarum

margines prope flum. Knysna, distr. George (IV. C. b.) Jan. 1839, Krauss, n. 1185.

24. *P. lanceolatum, E. Mey.!* in Hb. Drège.—*Dregea collina,* Eckl. et Zeyh. l. c. ?—In solo granitico ad ripas flum. Notsinakamma prope George (IV. C. b.) Jan. 1839. Krauss, n. 1184. This appears to me to be a mere variety of the foregoing, from which it differs only in having the segments of the leaves narrower (only 1½-2 lines broad, whereas in *P. virgatum,* they are often 4-5 lines broad) and the radii of the umbella shorter and less crowded, though more numerous than Ecklon indicates, viz. 10-14.

25. *Bubon Galbanum, Linn.* DC. l. c. p. 185.—Of this well known plant Dr. Krauss has sent us three forms, differing in the shape and size of the segments of the leaves, but evidently belonging all to the same species; his n. 1186, (gathered in May 1838 on the sides of the Table Mountain, Cape) agrees entirely with the figure in Jacquin's Hort. Vindob. 3. t. 36, quoted by De Candolle: n. 1178, (found in Dec. 1838, near Gnadenthal, at an elevation of 1000 feet) has the segments of the leaves much larger (1-1½ inches long, and 6-10 lines broad,) and n. 1186^{b}. (from the top of the Table Mountain, Cape, March 1840,) has them much narrower (2-3 lines broad) and more elongato-cuneate, approaching somewhat to those of *Bubon gummiferum,* which, however, to judge from the figure in Commelyn's Hort. Amst. 2, t. 58, is quite a different plant.

26. *Bubon hypoleucum,* n. sp.—glaberrimum, caule herbaceo ? erecto, ramoso, folioso, tereti, glauco, tenuiter striato; foliis decomposito-tripinnatisectis, lacinulis linearibus acutis, supra læte viridibus, subtus albido-glaucis; involucro utroque polyphyllo, foliolis lanceolato-linearibus persistentibus; calycis margine obsoleto, truncato; mericarpiorum jugis dorsalibus obtusissimis, marginalibus crassiusculis obtuse carinatis.

Ad rivulos prope Gnadenthal (IV. A.) Dec. 1838. Krauss, n. 1183.

In habit and foliage, this plant is not unlike some *Selinum* or *Peucedanum,* but its fruit agrees only with *Bubon,* having not only a broad vitta in each vallecula, but moreover a thinner one under each jugum. The fruit is 3 lines long and about 1½ line in diameter; it differs from the character given by De Candolle only in the margins of the mericarpia being not attenuated, but on the contrary somewhat thickened and but little prominent, almost in the shape of a blunt nerve. The umbellæ are even larger than in *B. Galbanum*, the radii measuring, when in fruit, 1½ to upwards of 2 inches, and the pedicels 5-6 lines. The folioles of the involucre scarcely exceed 3 lines in length, and, at the base, 1 line in breadth. The leaves attain almost one foot in length, and their lowermost divisions, which originate with long petioles from the very top of the vagina, vary in length from 4 to 10 inches. The lacinulæ in form and size resemble exactly those of *Peucedanum officinale*, (Schkuhr Handb. t. 63.)—Evidently this plant is a new species of *Bubon*, widely different from the three hitherto described.

Obs. Under *Bubon gummiferum* L., Ecklon (enum. p. 353,) quotes his specimens distributed by the Unio itineraria under No. 563; but these, according to those of my own herbarium derived from the same source, are quite different, not at all resembling Commelya's figure above quoted, and most certainly belong to *Peucedanum abbreviatum*, E. Mey. (see above n. 22.)

27. *Hermas villosa, Thunb.* DC. prodr. 4, p. 242.—In summitate Montis Tafelberg, (III. A. e.) Mart. 1840. Krauss, n. 1194.

28. *H. capitata, Linn. fil.* DC. l. c.—Cum præced. Krauss, n. 1195.

HAMAMELIDEÆ.

1. *Trichocladus peltatus*, n. sp.; ramis ad nodos compressis cum gemmis foliorumque nervis subtus fusco-villosis; foliis oppositis, peltatis, oblongis ovatisve, acuminatis, basi rotundatis v. leviter cordatis, subtus molliter stellato-pilosis, supra

demum glabris; spicis masculis terminalibus subsessilibus subglobosis.

In sylvis primitivis terræ Outeniqua prope George (IV. C. b.) Jan. 1839. Krauss, n. 1215.

From all the other species of the genus (cfr. DC. prodr. 4, p. 269. Eckl. et Zeyh. enum. p. 356.) our plant differs essentially by its peltate leaves, and from *T. ellipticus* and *verticillatus*, Eckl. et Zeyh., moreover in their position. It certainly approaches very near *T. crinitus*, Pers., the leaves of which, however, are not described as peltate by any author, a conformation which none of them could have left unnoticed. Thunberg describes the leaves as "ovata glabra," whereas De Candolle calls them "pube molli *sublepidota* stellata villosa," and so they are in our plant. They are generally elliptic-oblong, from 2 to 4 inches in length and (about the middle) 1-1½ inches in breadth, and insensibly attenuated into an acute acumen; but on some branches they are in part quite ovate, scarcely and bluntly acuminate and not above 1½ inches long. The petiole varies in length from 2 to 6 lines, and the distance of its insertion from the margin of the lamina is 4 lines at the most, very frequently much less, and in this case the base of the lamina is more or less cordate. The male flowers form a solitary capitule of the size of a cherry, almost sessile at the end of the branches between two small narrow tomentose leaves. Their structure answers perfectly De Candolle's description. The bracteoles are linear, deciduous, covered with stellate pubescence. The petal is linear (reddish?) convolute, blunt, 2½ to 3 lines long, glabrous, the stamen half as long, the filament rather thick, complanate, dilated at the base, as long as the thick, adnate oval anther which is terminated with a small blunt point; its two cells open longitudinally and widely. We have not seen the female plant.

CORNEÆ.

1. *Curtisia faginea, Ait.* DC. prodr. 2, p. 12.—In hiatu ad latus orientale Montis Tafelberg (III. A. e.) Sept. 1838. Krauss, n. 1216.

LORANTHACEÆ.

1. *Loranthus Schlechtendalianus, Schult.* — *L. elegans,* Cham. et Schl. in Linnæa 3, p. 209, (non Wall., DC.)—Crescit in Mimosis aliisque arboribus secus flum. Zwartkopsrivier, distr. Uitenhage (IV. C. c.) Apr. 1839. Krauss, n. 1217.

From *L. oleæfolius,* Cham. et Schl., to which, according to Drège's specimens, our species bears great resemblance, particularly in the foliage, it differs chiefly in having the tube of the corolla shorter, almost equally narrow every where (not ventricose above) and the segments of the limb about as long as the tube, nearly filiform and spirally recurved.

2. *L. Natalitius,* n. sp.—glaberrimus, ramis teretibus; foliis oppositis, breve petiolatis, lanceolato-oblongis, obtusis, prope basin 3-5-nerviis, nervis apicem versus evanescentibus; floribus in apice ramulorum brevium paucis aggregatis, breve pedunculatis, pendulis, 5-meris; calyce brevissimo, turbinato, repando-dentato; corollæ tubo longo, tereti, angusto, æquali, demum hinc fisso, fauce angustata, limbo ante explicationem attenuato-acuto tubo multoties breviore, lobis lanceolatis vix secedentibus; staminibus fauci insertis erectis, antheris linearibus basifixis; stigmate subcapitato, truncato.

In Mimosis parasiticam prope flum. Umlaas, Port Natal (V. c.) Dec. 1839. legit Dr. Ferd. Krauss, n. 208.

This seems to be near *L. Belvisii,* DC. which, however, differs in the shape of the leaves and corolla.—The flowers in our specimens being almost all detached from the branches, I am not sure of the exact mode in which they have been disposed. They are full 2½ inches long.

3. *L. Kraussianus,* n. sp.—glaberrimus, ramis teretibus;

foliis suboppositis et alternis, petiolatis, ovato-oblongis obtusis, penninerviis v. spurie triplinerviis; pedunculis axillaribus, solitariis, brevissimis, umbellam 3-8-floram gerentibus; floribus 5-meris, calyce brevissimo, subtruncato; corollæ tubo tereti, subclavato, basi ovato-inflato, fauce angustata, limbo ante explicationem subconico obtuso, laciniis erectis apice dia cohærentibus basi attenuatis superne concavo-spathulatis; staminibus fauci insertis, demum recurvo-exsertis, filamentis complanatis, apice antice brevissime auriculatis, antheris basifixis anguste linearibus; stylo corollam æquante, superne incrassato sulcato, apice iterum attenuato, stigmate subcapitato truncato. Parasiticam in umbrosis sylvarum prope Port Natal (V. c.) Nov. 1839, legit Dr. Ferd. Krauss, n. 125.

A very distinguished species, belonging perhaps rather to De Candolle's second section (*Symphyanthus*), of which no South African species is known, than to the third (*Scurrula*); inasmuch as the limb of the corolla is generally split and always quite regularly into 5 perfectly equal segments which remain erect, the tube usually remaining entire, for only in a few flowers I find it split too, but very unequally and irregularly (as it were, accidentally) by one or two deep fissures. The twigs are somewhat compressed towards the extremity. Leaves two inches long, one inch broad, with a petiole of 2-3-lines. The nerves are very thin and truly pinnate, but the superior ones frequently so inconspicuous totally obliterated that the leaves might be called tripli or quintuplinervia. The general peduncles are but one or two lines long, the pedicels a little longer, and there is a minute broad blunt scale-like bracteole at the base of the calyx. Corolla 18-20 lines long; its limb 3 lines long, is at first separating from each other only at their base which then takes somewhat a ventricose appearance. The stamens are at first curved down into the tube, almost as in *Melastomaceæ*, and afterwards become recurved outward; if quite erect they would reach to the top of the laciniæ of the corolla.

RUBIACEÆ.

1. *Gardenia Thunbergia, Linn. fil.* DC. prodr. 4. p. 382.—In sylvis primitivis Caffrariæ (V. c.) Mart. 1840. Krauss, n. 1262.

2. *Anthospermum Æthiopicum, Linn.* DC. l. c. p. 580.—In arenosis planitiei capensis (III. E. b.) Nov. 1838. Krauss, n. 1206.

3. *A. spathulatum, Spr.* DC. l. c.—In solo arenoso prope Constantiam (III. D. b.) Sept. 1838. Krauss, n. 1207.

4. *Ambraria hirta Cruse.* DC. l. c.—Ad latera mont. Duyvelsberg (III. A. e.) Jul. 1838. Krauss, n. 1208 (pl. masc.)—Our specimens differ somewhat from Drège's in having the leaves less remote and shorter.

5. *Lagotis spermacocea, E. Mey.?* in Hb. Drège.—In graminosis prope flum. Knysna, distr. George, (IV. C. b.) Febr. 1839. Krauss, n. 1205.—Our specimens from Drège, as well as Krauss, are too imperfect to enable me to draw up the character of this undescribed and apparently new genus. The habit is that of some slender species of *Spermacoce,* and the chief generic character seems to consist in the great inequality of the teeth of the calyx, one (or sometimes two) being liguliform, almost as long as the tube, and the rest quite minute. The flowers are axillary, solitary and pedicellate.

LOBELIACEÆ.

Dobrowskia Drègeana, Presl, in Hb. Drège.—In summitate montium prope Pieter Mauritzburg, Port Natal (V. c.) Dec. 1839. Krauss, n. 203.

JASMINEÆ.

Jasminum Capense, Thunb. fl. Cap. p. 4.—*J. angulare Vahl, β glabratum,* E. Mey. comment. p. 174.—Inter frutices prope Uitenhage (IV. C. c.) Apr. 1839. Krauss, n. 1261.

APOCYNEÆ.

1. *Ectadium? oblongifolium*, n. sp.—glaberrimum, ramis gracilibus; foliis oppositis, subsessilibus, lanceolato-oblongis, brevissime acuminato-acutis; cymis axillaribus folio triplo brevioribus, paucifloris; calyce brevi, lobis obtusis; corollæ limbo dextrorsum torto, sinuum processibus minutis; antheris glabris.

Ad sylvarum margines prope flum. Umgani, Port Natal (V. c.) Nov. 1839. Krauss, n. 132. "Fruticulus 3-4-pedalis."

In habit and foliage this plant is very like *Apocynum hypericifolium*. From *E. virgatum*, E. Mey. comm. p. 188, it is quite distinct, and since it differs even in some points from the generic characters as established by Meyer, namely in the minute, almost obsolete appendages at the sinus of the corolla, which Meyer calls "sinistrorsum contorta," I must contradict this statement, finding the lobes positively *dextrorsum* contorti not only in our new species, but also, as far as my specimen permits to ascertain, in *E. virgatum*, but in this species the lobes are very little twisted indeed.

ASCLEPIADEÆ.

1. *Tylophora Caffra, n. sp.*—fruticosa, ramis puberulis; foliis oppositis, breviter petiolatis, lanceolato-oblongis, acutis, minute, pubescentibus, supra demum glabris; umbellis alterne axillaribus, simplicibus, nutantibus, pedicellis pedunculum subæquantibus petiolo duplo longioribus calycibusque puberulis; alabastris subglobosis, calyce patente, corolla subcampanulata.

In graminosis circa Port Natal (V. c.) Aug. 1839. Krauss, n. 85.

From what we have seen of this species, it does not appear to be a climbing plant. Branches rather straight, densely covered with a minute, soft, greyish pubescence. Leaves 1-2½ inches long, ½-1 inch broad, with a petiole 1-2 lines long; they are membranous, somewhat paler underneath, and generally acute, the inferior and younger ones sometimes obtuse; nerves pinnate, prominent on the inferior, scarcely visible on the upper surface. Umbellæ solitary, alternately in the axils of only one of each pair of opposite leaves, about 8-flowered; peduncle filiform, 6 lines long; bracteole at the base of each pedicel one line long. Flowers of the size of those of *Apocynum androsæmifolium;* corolla about four times larger than the calyx, wide, between the campanulate and rotate form, divided till near the middle into 5 oblong, obtuse, little diverging lobes, dark purple? the bottom pale greenish. Stamens and corona minute. Fruit unknown.

2. *Aspidoglossum heterophyllum, E. Mey.!* comm. p. 200. Ad flum. Kromme Rivier (IV. C. c.) Febr. 1839. Dr. Krauss.

3. *Gomphocarpus hastatus, E. Mey.* l. c. p. 201. β *angustifolius,* nob. foliis lanceolatis basi truncatis v. subhastatis, margine undulato-crispulis.

In collibus circa Melkhout Kraal prope flum. Knysna, distr. George (IV. C. b.) Febr. 1839, et in graminosis distr. Zwellendam (IV. C. a.) Dec. 1838, legit Dr. Krauss.

Suffrutex, ramis alternis subdivaricatis, subsimplicibus, spithamæis, pedunculis terminalibus, solitariis v. geminis, ½-1 poll. longis, 10-15-floris, pedicellis 3-4 lin. longis, alabastris subglobosis, corolla basi sulphurea, apice v. demum tota atro-fusco-purpurascens. Fruct. non vidi.

3. *G. frutescens, R. Br.* E. Mey.! l. c. p. 202. In arenosis ad ripas flum. Gauritz (IV. C. a.) Jan. 1839. Krauss, n. 1258.

4. *Lagarinthus tenuis, E. Mey.?* comm. p. 203. In graminosis prope Zwellendam (IV. C. a.) Jan. 1839. Dr. Krauss. —Our specimens differ from Drège's only in having many-flowered umbels, and the corolla turned down.

5. *L. navicularis, E. Mey.!* l c. p. 204. Cum præcedente legit Dr. Krauss.

6. *L. peltigerus, E. Mey.* l. c. p. 205.—In graminosis prope

Port Natal (V. c.) Krauss, n. 105.—Drège's plant has the flowers somewhat larger and the leaves shorter.

7. *L. expansus, E. Mey.* l. c. p. 206. In graminosis prope flum. Knysna (IV. C. b.) Febr. 1839. Dr. Krauss' plant has the leaves minutely but thickly pubescent on both sides.

8. *L. truncatus, E. Mey.?* l. c. In graminosis in Zitzikamma (IV. C. b.) Mart. 1839. Dr. Krauss.—Perhaps a new species, differing from Drège's plant, which we have not seen, in having the leaves glabrous and the terminal umbella solitary, with an involucre of 4-5 linear leaflets of equal length as the pedicels, 4-5 lines; but our specimens are insufficient.

9. *L. gracilis, E. Mey.?* l. c. In graminosis prope flum. Knysna, distr. George (IV. C. b.) Febr. 1839. Krauss, n. 1261.—Bad specimens, differing somewhat from Drège's plant in having the leaves longer than the internodia and glabrous.

10. *L. flexuosus, E. Mey.* l. c. p. 207. In graminosis prope flum. Umlaas, Port Natal (V. c.) Oct. 1839. Krauss, n. 343. Our specimens have the stems not at all flexuose, else they agree well with Drège's. They bear great resemblance to *L. gibbus*, E. Mey., but this has the leaves glaucous, narrower at the base, and longer.

11. *L. interruptus, E. Mey.!* l. c. p. 208. In collibus prope Mauritzburg, Port Natal (V. c.) Aug. 1839. Dr. Krauss.

12. *L. virgatus, E. Mey.* l. c. *β glabratus, nob.* foliis glabris, internodia vix superantibus v. brevioribus. In graminosis prope Uitenhage (IV. C. c.) Maj. 1839. Dr. Krauss.

13. *Pachycarpus grandiflorus, E. Mey.!* l. c. p. 209. In graminosis prope Port Natal (V. c.) Aug. et Sept. 1839. Krauss, n. 1260.

14. *P. concolor, E. Mey.* l. c. p. 210. Cum præcedente, ad sylvarum margines, Dec. 1839. Krauss, n. 83.

15. *P. asperifolius*, n. sp. caule simplici, glabro; foliis, oppositis, lanceolato-oblongis, acutis, in petiolum brevissi-

mum attenuatis, planis, utrinque hispidulo-scabris, nervo medio subtus crasse costatis; pedicellis axillaribus 5-8 umbellato-aggregatis, folio duplo brevioribus calycibusque puberulis; corolla patente, concolore; coronæ foliolis erectis, lamina membranacea ovata acuta mutica erecta apice inflexa terminatis, basi utrinque 1-dentatis, folliculis——? Cum præcedente legit Dr. F. Krauss.

Species media inter *P. appendiculatum* et *orbicularem*, E. Mey. l. c.; a priore, facie simillimo, differt præcipue foliis inferne attenuatis, ab utroque corolla patente et coronæ forma. Umbellæ in axillis alternis sessiles (nunquam? oppositæ) pedicellis 6-8 lin. longis. Corolla as large as in *P. ligulatus* and *P. concolor*, of a pale greenish colour, the segments oblong, acute.

16. *P. ligulatus, E. Mey.* l. c. p. 211. In graminosis in Zitzikamma (IV. C. b.) Mart. 1839 et prope flum. Kromme Rivier, Uitenhage (IV. C. c.) Febr. 1839. Dr. Krauss.—This species is extremely like *P. vexillaris*, but has a very differently shaped corona staminea.

17. *P. crispus, E. Mey.!* l. c. p. 214. In solo granitico prope Erste Rivier, Stellenbosch (III. A. e.) alt. 1000 ped. Nov. 1838, Krauss, n. 1259.

18. *P. albens, E. Mey.!* l. c. Ad sylvarum margines prope Port Natal (V. c.) Dec. 1839. Krauss, n. 84.

19. *P. viridiflorus, E. Mey.* l. c. In graminosis ad radicis Montium Tafelberge prope Port Natal (V. c.) Aug. 1839.—We have not seen Drège's plant, but our specimens perfectly agree with the diagnosis given by Meyer.

20. *Cynoctonum pilosum, E. Mey.!* l. c. p. 216. Scandens in sylvis primitivis ad Goukamma Rivier, (IV. C. b.) Febr. 1839. Krauss, n. 1256.

21. *C. crassifolium, E. Mey.* l. c. Decumbens in arenosis terræ Zitzikamma (IV. C. b.) Mart. 1839. Krauss, n. 1257.—Our specimens have the leaves much less, and indeed almost imperceptibly ciliated than Drège's.

22. *C. Capense, E. Mey.!* l. c. (excl. syn). Scandens in sylvis primitivis, Zitzikamma (IV. C. b.) Mart. 1839. Krauss,

n. 1255.—All the specimens we have seen of this species (from Drège and Krauss) having the calyx perfectly glabrous and the corona almost entire and scarcely shorter than the corolla, we suspect that they form a distinct species from *Cynanchum Capense*, Linn. fil., which E. Meyer refers to his plant, but of which R. Brown (Asclep. in Mem. Wern. Soc. I.) says, "calycibus pubescentibus, corona 5-fida corolla duplo breviore." We therefore propose to distinguish the latter by the name of *Cynoctonum Brownii.*

23. *C. lycioides, E. Mey.* l. c. p. 217, *β majus nob.*, glabrum, foliis ovato-oblongis v. ellipticis, petiolis basi tortis, pedunculis alterne axillaribus folium subæquantibus, umbella multiflora, radio uno alterove sæpius umbellulifero.

Port Natal (V. c.) Nov. 1839. Dr. Krauss.

Except the differences above mentioned, our plant agrees well with Drège's. The leaves are thin, acute and attain 1½-2 inches in length and 1 in breadth; the petiole varies from 3 to 5 lines.

24. *Glossostephanus linearis,* E. Mey.! l. c. p. 218. Ad rivulos prope Langekloof, distr. George (IV. B. c.) Mart. 1839. Krauss, n. 1356.

25. *Cordylogyne globosa,* E. Mey.! l. c. Port Natal (V. c.) Krauss, n. 171.

SCROPHULARINEÆ.

1. *Limosella Capensis, Thunb.* Fl. Cap. p. 480. L. diandra Linn.—In aquis stagnantibus circa Uitenhage (IV. C. c.) Maj. 1839. Krauss, n. 1252.

OROBANCHEÆ.

1. *Hyobanche sanguinea, Linn.* mant. alt. p. 253. E. Mey.! in Hb. Drège. In arenosis prope Port Natal (V. c.) Dec. 1839. Dr. Krauss.

AMARANTACEÆ.

1. *Alternanthera sessilis, R. Br.* E. Mey. in Hb. Drège!

In solo salino circa Port Natal (V. c.) Jun. 1839. Krauss, n. 221.

2. *Sericocoma* (*Euchroa*) *chrysurus*, n. sp., glaberrimum, basi suffruticosum? caulibus simplicibus, erectis; foliis oppositis v. subopposítis, lanceolatis, acutis, attenuato-subpetiolatis, subaveniis; spica terminali, cylindrica, obtusa, simplici v. basi subramosa; sepalis lanceolatis, muticis, dorso inferne ovarioque villosis.

In graminosis ad sylvarum margines in solo arenoso prope Port Natal (V. c.) Jul. 1839. Dr. Krauss, n. 294.

Caules herbacei pedales-sesquipedales, teretes, tenuiter sulcato-striati, infra medium paucifoliati, superne aphylli v. folio unico a reliquis et spica longe remoto præditi, internodiis inferioribus 1½-3 poll. longis. Folia circ. bipollicaria, 4-5 lin. lata, plana, subcarnosula, læte viridia, costa media subtus prominula, venis vix conspicuis. Spica terminalis solitaria, aureo-sericea, 1½-3-pollicaris, nunc simplicissima, nunc ima basi spicas 1-2 sessiles vix semipollicares emittens. Floris structura, exceptis staminodiis, omnino *Trichinii* R. Br. prodr. p. 414.

Perhaps our plant is the same as *Sericocoma avolans*, Fenzl in Hb. Drège, n. 895 (Endl. gen. Mantissa 1, p. 33) which I have not seen; nor am I aware of its being described anywhere. In outward appearance of the spikes it has a striking resemblance with *Pupalia Schimperi* Hochst. in Schimper's Abyssinian collection, sect. I, n. 3, but this, besides being all over hairy and having much larger leaves and flowers, is generically distinct, having the lateral flowers sterile and changed into thin spinescent hooks and the fertile stamens alternating with membranous staminodia, and therefore is a true *Pupalia*. Another species, determined as a *Trichinium* by E. Meyer, and distinct from ours, occurs among Drège's plants.

3. *Achyranthes aspera, Linn*, Thunb. Fl. Cap. p. 215, E. Mey. in Hb. Drège. In sylvis primitivis prope flum. Goukamma, distr. George (IV. C. b.) Febr. 1839. Krauss, n. 780 (ex parte.)

4. *Achyranthes leptostachya, E. Meyer!* in Hb. Drège; caule frutescente, ramis adpresse puberulis; foliis lanceolatis v. subspathulatis, obtusiusculis, attenuato-subpetiolatis, subtus adpresse subsericeo-pilosiusculis, supra glabrescentibus; spicis ramos ramulosque terminantibus, paniculam fastigiatam foliatam formantibus; floribus patulis, muticis.

In solo lapidoso-arenoso ad ripas flum. Koega, distr. Uitenhage (IV. C. c.) Apr. 1839. Krauss n. 785.

A very distinct species. Branches slender, round, slightly striate. Leaves about 1 inch long, 2-4 lines broad. Spikes at first short, conical and thickly flowered, with two linear leaves at their base (from the axillæ of which sometimes originate two very short lateral spicæ) afterwards more or less elongated (1-1½ inch long) slender and bearing the flowers more remote (1-2 lines distant) from each other on a pubescent filiform rachis. Bracteæ very small, ovate, acute, (but not spinescent) persistent; bracteolæ still smaller, bluntish and falling off with the fructiferous calyx, which is then ovate and not above 1 line long. Sepals 5, sometimes 4, green, rather thick and hard, lanceolate, obtuse, concave. Staminodia minute.

5. *Aerva lanata, Juss.* Roem. et Schult. syst. 5, p. 564. In graminosis prope Port Natal (V. c.) Jul. 1839. Krauss, n. 298. It agrees perfectly with our East Indian specimens.

6. *Desmochæta atropurpurea, DC.* E. Mey.! in Hb. Drège. In sylvis primitivis prope flum. Goukamma, distr. George, (IV. C. b.) Febr. 1839. Krauss, n. 780 (ex parte).

7. *Amarantus albus, Linn.* Thunb. fl. Cap. p. 215. In solo argillaceo terræ Zitzikamma, distr. George (IV. C. b.) Jan. 1839. Krauss, n. 782.

8. *A. polygonoides, Linn.?* In solo argillaceo prope Uitenhage (IV. C. c.) Apr. 1839. Krauss, n. 781. Specimens too bad to be surely determined.

7 9. *Celosia triloba, E. Mey.!* in Hb. Drège. Herbacea, annua, glaberrima; caule erecto, simplicissimo, gracili; foliis petiolatis, inferioribus e basi subcordata in petiolum breviter

decurrente ovatis acuminatis, superioribus sensim angustioribus; stipulis ad petioli basin foliaceis, subfalcato-semiovatis, acutis, patulis, persistentibus; floribus glomerulatis, in spicam terminalem nudam dispositis, glomerulis inferioribus pedunculatis, superioribus sessilibus, calyce mutico.

In graminosis prope flum. Umgani, Port Natal (V. c.) Jun. 1839. Krauss, n. 238.

A very slender, weak herb, about 1 foot high; inferior leaves nearly 1 inch long (little exceeding the petiole) and 6-8 lines broad; stipules as long or little shorter than the petiole; spike 1-2 inches long glomeruli about the size of a pea, flowers white, satinlike shining.

10. *Lestiboudesia ? Caffra,* n. sp. suffrutex ? glaberrimus, ramis virgatis, elongatis, simplicibus, superne subaphyllis; foliis sparsis, spathulato-linearibus, obtusis; spicis terminalibus, ternis, pedunculatis, gracilibus, intermedia elongata staminodiis bifidis, stigmatibus 3, utriculo 2-spermo.

In graminosis ad sylvarum margines prope Umlaas Lager, Port Natal (V. c.) Dec. 1839. Krauss, n. 37.

Ramus bipedalis et ultra, infra medium satis dense foliosus (internodiis hic 2-6 lin. longis) superne folia pauca longe distantia gerens, teres, obsolete lineatus. Folia ordine spirali 2-5 disposita, 1-1½ poll. longa, in petiolum brevem sensim anguste decurrentia, ultra medium latiora (3 lin lata) apice parum angustata, obtusa. Spica terminalis (intermedia) semi-pedalis (inferne jam deflorata, bracteis diu persistentibus, patulis, membranaceis, lanceolatis, lin. 1-1½ longis obsita), laterales 1-1½ poll. longæ, floribus superioribus dense contiguis, inferioribus remotiusculis. Calyx albus, nitidus. Staminodia antheras breviter superantia, apice acute bifida. Antheræ 2-loculares. Stigmata 3 brevia, sessilia, revoluta. Utriculus circumscissus, 2-spermus. Semina lenticularia, nigra, nitida, testa crustacea.

Although our plant somewhat deviates from the generic character assigned to *Lestiboudesia* (of which we have seen no other species) especially in having the capsule only two-seeded, we entertain little doubt of its really belonging to that

genus. It approaches near *L. virgata*, Rœm. et Schult. syst. 5, p. 533 (Celosia virgata, Jacq. ic. rar. t. 339), which, however, to judge from the figure, differs in its much broader leaves, thicker and branched spike, and larger flowers.

CHENOPODIACEÆ.

1. *Salicornia Indica, Vahl*, E. Mey. in Hb. Drège. Ad ostium flum. Knysna, distr. George (IV. C. b.), Jan. 1839. Krauss, n. 783.

2. *Atriplex Halimus, Linn. A. portulacoides*, E. Mey.! in Hb. Drège.—In solo argillaceo ad rivulos, distr. Uitenhage (IV. C. c.), Apr. 1839. Krauss, n. 789.

3. *Chenopodium ambrosioides, L.* Thunb. Fl. Cap. p. 246. In solo argillaceo prope flum. Knysna, distr. George (IV. C. b.) Febr. 1839. Krauss, n. 788.

4. *C. mucronatum, Thunb.?* l. c. In solo lapidoso-argillaceo ad radices montium Winterhoek (IV. C. c.) Maj. 1839. Krauss, n. 791.

5. *Ch. murale, Linn.* E. Mey.! in Hb. Drège. Circa domicilia incolarum in Zitzikamma (IV. C. b.) Mart. 1839. Krauss, n. 790.—Eandem speciem prope Porto Prayo insulæ St. Yago, Cap. Virid. Apr. 1838, legit Dr. Krauss.

6. *C. Botrys, Linn.*—Ad ripas flum. Koega, distr. Uitenhage (IV. C. c.) Apr. 1839. Krauss, n. 792.

6. *Kochia sericea, Schrad.*—*Salsola diffusa*, Thunb. Fl. Cap. p. 243.—Ad ripas fl. Knysna, George (IV. C. b.) Feb. 1839. Krauss, n. 786.

POLYGONEÆ.

1. *Polygonum tomentosum, Willd. β. denudatum*, Meisn. in Linnæa 14, p. 483.—In paludibus et ad rivulos distr. Uitenhage (IV. C. c.) Maj. 1839. Krauss, n. 802.

2. *P. tomentosum, W. γ. strigillosum*, Meisn. l. c. Locis humidis prope flum. Knysna, distr. George (IV. C. b.) Jan. 1839. Krauss, n. 800.

3. *P. strictum, All.* Meisn. l. c. p. 485. Forma *a.*—In

uliginosis planitiei Capensis (III. E. b.) Sept. 1838. Krauss, n. 801.

4. *Oxygonum Drègeanum, Meisn.* l. c. p. 487. In graminosis circa Port Natal (V. C.) Jul. 1339. Krauss, n. 283. " Herba decumbens."

5. *Atraphaxis undulata, Linn.* Meisn. l. c. p. 489. In solo lapidoso in Langekloof, distr. George (IV. B. b.) Feb. 1839. Krauss, n. 1265.

6. *Emex Centropodium, Meisn.* l. c. p. 490. In solo lapidoso-argillaceo ad ripas rivulorum distr. Uitenhage (IV. C. c.) Apr. 1839. Krauss, n. 784.

7. *Rumex Nepalensis, Spreng.* Meisn. l. c. p. 492. Secus rivulos ad latus mont. Tygerberg, distr. Cap. (III. D. a.) Aug. 1838.

8. *R. Meyeri, Meisn.* l. c. p. 494. α. forma elatior, erecta. In uliginosis planitiei Capensis, prope Constantiam (III. E. b.) Sept. 1838. Krauss, n. 795.—β. forma humilis, adscendens.—In uliginosis et ad rivulos in Zoetendalsvaley, distr. Zwellendam (IV. C. a.) Dec. 1838. Krauss, n. 797.

9. *R. Acetosella, Linn.* Meisn. l. c. p. 496. In vineis Constantiæ (III, E. b.) Sept. 1838. Krauss, n. 790.

10. *R. lativalvis, Meisn.* l. c. p. 497, α. acetosoides. Cum præced. legit Dr. Krauss, n. 794. Folia infima ovato-subrotunda, obtusissima, basi leviter cordata nec auriculata.

11. *R. sagittatus, Thunb.* β *latilobus,* Meisn. l. c. p. 499. " Frutex scandens." Ad sylvarum margines prope flum. Goukamma, distr. George (IV. C. b.) Feb. 1839. Krauss, n. 796.

12. *R. cordatus, Desf.* Meisn. l. c. p. 500. Ad latus occidentale mont. Duyvelsberg, alt. 2000 ped. (III. A. e.), Jul. 1838. Krauss, n. 799.—Specimina alia vix spithamæa, tubere digitum fere crasso et longo, alia fere pedalia.

THYMELÆÆ.

1. *Passerina anthylloides, Linn.* fil. α *vulgaris,* Meisn. in Linnæa 14, p. 393.—In collibus prope flum. Knysna, distr.

George (IV. C. b.) Jan. 1839. Krauss, n. 772.—β. *macrophylla,* Meisn. l. c.—In summitate montium Tafelberge prope Port Natal (alt. 2500-3000 ped.) Sept. 1839, Krauss, n. 779. Folia imo inferiora pilis longioribus minusque adpressis villosa. Formam præterea inter β et γ intermediam, foliis utrinque fere glabris insignem, in arenosis graminosis circa Port Natal, Jul. 1839, legit Dr. Krauss, n. 282.

2. *P. laxa Wickstr.* Meisn. l. c. p. 396.—In solo ganitico ad rad. mont. Tafelberg (III. E. b.) Jul. 1838. Krauss, n. 751.

3. *P. spicata, Linn. fil.* Meisn. l. c. p. 398.—In planitie Zoetendalsvalei, distr. Zwellendam (IV. C. a.) Krauss, n. 754.—From these specimens it appears that the flowers are originally terminal, forming small heads, with a gemma in the centre, which afterwards grows out into a branch, so as to change the position of the flowers into a lateral one.

4. *Cryptadenia grandiflora, Meisn.* l. c. p. 405.—In arenosis planitiei Capensis (III. E. b.) Nov. 1839. Krauss, n. 756. —The leaves in these specimens are remarkably short, generally not above two lines long.

5. *C. uniflora, Meisn.* l. c. p. 406.—Cum præced.—Krauss, n. 1835.

6. *Lachnæa capitata, Meisn.* l. c. p. 414, α et β.—Inter frutices in planitie Capensi, Maj. 1838, Krauss, n. 761 et 762.

7. *L. diosmoides, Meisn.* l. c. p. 418, *α*. In sylvis primitivis terræ Outeniqua prope George, alt. 1000 ped. (IV. C. b.) Jan. 1839. Krauss, n. 773. Folia subcarinata.

8. *L. axillaris, Meisn.* l. c. p. 422. In solo arenoso planitiei Zoetendalsvalei (IV. C. a.) Dec. 1838. Krauss, n. 1265 bis.

9. *Gnidia* (*Pentameræ*) *Kraussiana,* n. sp.—herbacea? caule recto simplici; foliis ovalibus v. lanceolato-oblongis nervosis; capitulo terminali, solitario, pedunculato, multifloro; involucri 8-12-phylli patuli foliolis ovato-oblongis v. lanceolatis pubescentibus, flores subæquantibus; floribus extus sericeo-

villosis, limbi patentis lobis ovalibus obtusissimis, squamas oblongas obtusissimas dimidio superantibus.

a. pubescens, caule ubique piloso, foliis lanceolatis oblongisve, acutiusculis, inferioribus ciliatis, pedunculo et involucro dense sericeo-pilosis. (Krauss, n. 455).

β. glabrata, caule foliisque glabris, foliis ovalibus obovatisve v. ovali-oblongis, obtusis v. obtuse subacuminatis, pedunculo parce piloso, involucro extus glabrescente margine piloso. (n. 455 b).

Utramque varietatem (*a* frequentiorem) ad latera montium tabularium prope Port Natal (V. c.) Sept. 1839. legit Dr. Ferd. Krauss.

A fine species, closely allied to *G. capitata*, but easily distinguishable by its evidently herbaceous stems, its broader leaves, its flowers scarcely longer than the involucre, and its larger petaloid appendages. The leaves are generally alternating, but frequently approximated by pairs, and sometimes even truly opposite, from 8 to 15 lines long, and 2½-7 lines broad, somewhat coriaceous, of a pale colour, and having on each side of the mid-rib one or two prominent veins which give them in some degree the appearance of folia tripli-v. quintuplinervia. Capitula hemisphærical of the size of a walnut. Flowers 6-7 lines long, covered with a silky, pale yellowish pubescence, and towards their base with long white hairs; petals 1½ line long, 1 line broad.

10. *G.* (*Pentameræ*) *macropetala*, n. sp.—fruticosa, ramulis pubescentibus; foliis spathulatis, acutiusculis, utrinque adpresse pilosis, junioribus sericeis, involucralibus conformibus; capitulis terminalibus, demum lateralibus, pedunculo brevissimo apice turbinato; floribus involucro polyphyllo semipatulo subduplo longioribus, extus subsericeo-canis, lobis obtusis squamas petaloideas ovales integras vix superantibus.

In graminosis ad sylvarum margines ubique circa Port Natal (V. c.) Jun. 1839. Krauss, n. 237.

This has entirely the habit, pubescence, leaves, inflorescence, peduncle and receptacle of our *G. Drègeana* (Linnæa 14, p. 426), but differs from it in the larger flowers, with longer segments, and, above all, the most conspicuous petals that I have seen in any species of the genus, except *G. Kraussiana*, they being full 1 line long, $\frac{2}{3}$ of a line broad, and of a lively yellow colour. From *G. cuneata*, with which it has also great resemblance, it differs likewise in the petals, and moreover in the pubescence.

11. *Gnidia sericea*, Linn. Meisn. l. c. p. 435. Locis argillaceis planitiei Capensis prope Constantiam (III. E. b.) Sept. 1838. Krauss, n. 771.

12. G. (*Tetrameræ*) *tenella*, n. sp.—herbacea ? caule simplicissimo, erecto ; foliis oppositis, ovali-oblongis, obtusis, concaviusculis, pilosis, summis majoribus sericeis ; capitulo terminali solitario, sessili, 2-4? floro ; floribus involucro 4-phyllo erecto parum longioribus, villosis, fauce inflata, limbi 4-fidi lobis ovalibus obtusis ; squamis petaloideis oblongis, acutis, dimidios lobos æquantibus ; antheris superioribus exsertis.

In latere orientali mont. Constantiaberg, alt. 2000 ped. (III. D. b.), Sept. 1838. Krauss, n. 776.

Very near *G. sericea* and *Harveyana* (Linnæa 14, p. 435, 437), but differing from the former in pubescence and in the leaves being not flat but slightly concave ; from the latter, in having the leaves opposite (not verticillate) and less rigid, and the flowers with eight (instead of four) anthers ; and from both, in the perfectly branchless and probably annual stem, and closely imbricate leaves. From *G. anomala β villosissima* (l. c. p. 436), which it resembles much in foliage and pubescence, it is chiefly distinguished by its simple and herbaceous stem.

13. *G. oppositifolia*, *Linn.* Meisn. l. c. p. 431. In graminosis ad latera montis prope Gnadenthal, Zwellendam, alt. 3000 ped. (IV. A.) Dec. 1838. Krauss, n. 758.

14. *G. pubescens*, *Berg.* Meisn. l. c. p. 438. In summitate montis Tafelberg (III. D. b.) Sept. 1838. Krauss, n. 770.

15. *G. carinata, Thunb.* Meisn. l. c. p. 444. In sylvis primitivis terræ Outeniqua (IV. C. b.) Jan. 1839. Krauss, n. 775.

16. *G. pinifolia, Linn.* Meisn. l. c. p. 445. Ad latus occidentale Montis Tabularis, alt. 1000 ped. (III. E. b.) Maj. 1838. Krauss, n. 752.

17. *G. subulata, Lam.!* Meisn. l. c. p. 449. In arenosis planitiei Capensis (III. E. b.) Nov. 1838. Krauss, n. 808.

18. *G. juniperifolia, Lam.! β uncinata*, Meisn. l. c. p. 451. —In lapidoso-arenosis montium prope Klein Rivier, Zwellendam (IV. B. b.) Dec. 1838. Krauss, n. 774 (forma foliis obsolete acerosis, vix uncinato-mucronatis).—γ. *pubigera*, Meisn. l. c. In calcareis planitiei Zoetendalsvalei, Zwellendam (IV, C. a.) Dec. 1838. Krauss, n. 755.

19. *G. decurrens, Meisn.* l. c. p. 451. In latere occidentali Montis Duyvelsberg, alt. 2000 ped. (III. A. e.) Jul. 1838. Krauss, n. 777.

20. *G. coriacea, Meisn.* l. c. p. 454.—Inter lapides ad latera montis Winterhoek, distr. Uitenhage, alt. 1000-2000 ped. (IV. C. c.) Apr. 1839. Krauss, n. 757. Forma, foliis, præcipue involucralibus paulo minoribus, ad *G. styphelioidem* accedens, sed nervatione distincta.

21. *Struthiola virgata, Linn. β pubescens*, Meisn. l. c. p. 464. In lateribus mont. Duyvelsberg (III. A. e.) Jul. 1838. Krauss, n. 766.—. *glabriflora*, nob. calycis tubo glaberrimo, limbi lobis dorso parce pilosis.—In solo lapidoso-arenoso montium prope Klein Rivier, Zwellendam, alt. 1000 ped. (IV. B. b.), Dec. 1838. Krauss, n. 767.

22. *S. erecta, Linn. α angustifolia*, Meisn. l. c. p. 469. In arenosis et ericetis planitiei Capensis et ad rad. mont. Constantiaberg et Steenbergen (III. D. b.) alt. 1000 ped. Jul.-Sept. 1838. Krauss, n. 750, 769.

23. *S. parviflora, Bartl.* Meisn. l. c. p. 467. In solo argillaceo-arenoso terræ Zitzikamma, distr. George (IV. C. b.) Mart. 1839. Krauss, n. 760.

24. *S. dodecapetala, Bartl.* Meisn. l. c. p. 475.—In solo

argillaceo-arenoso ad latera mont. Duyvelsberg, alt. 2000 ped. (III. A. e.) Feb. 1839. Krauss, n. 763.—An a *S. chrysantha* Lichtenst. satis distincta?

25. *S. hirsuta, Wickstr.* Meisn. l. c. 475.—In collibus prope flum. Knysna, distr. George (IV. C. b.) Jan. 1839. Krauss, n. 764.

26. *S. striata, Lam.!* Meisn. l. c. p. 477. β *angustifolia nob.* foliis linearibus lanceolatisve (1-2 lin. latis) superioribus sensim latioribus.

In arenosis planitiei Capensis (III. E. b.) Nov. 1838. Krauss, n. 765.

27. *S. lucens, Poir.!* Meisn. l. c. p. 478. In summitate Montis Tabularis, alt. 3000 ped. (III. D. b.) Maj. 1838. Krauss, n. 768.

28. *S. longiflora, Lam.!* Meisn. l. c. p. 479.—In lapidosis ad latus montis Leuwenkop, alt. 1000 ped. (III. D. b.) Sept. 1838. Krauss, n. 768 b.

PENÆACEÆ.

1. *Penæa squamosa, Linn.*—Inter rupes summitatis mont. Tafelberg (III. D. b.) Maj. 1838. Dr. Krauss.

2. *P. Cneorum, Lam.* Ill. n. 1581.—Inter lapides secus rivulos ad latera montium Winterhoek, distr. Uitenhage (IV. C. c.) Apr. 1839. Krauss, n. 1214.

3. *P. myrtilloides, Thunb.* prodr. p. 30. Fl. Cap. p. 149. *P. myrtoides,* Linn. fil. β *multiflora, nob.*—floribus in spicas terminales brevissimas capituliformes congestis.

Ad flum. Notzinakamma, distr. George (IV. C. b.) Jan. 1839. Krauss, n. 1213. (Drège, n. 8156?).

EUPHORBIACEÆ.

4. *Mercurialis tenella,* n. sp.; herbacea, glaberrima; caule humili, diffuso, ramosissimo, filiformi, angulato; foliis alternis, sessilibus, linearibus, acutis, stipulisque minutis lan-

ceolatis integerrimis, floribus masculis axillaribus sessilibus subsolitariis v. in pedunculo brevissimo paucis glomeratis.

In collibus arenosis littoralibus terræ Zitzikamma, distr. George (IV. C. b.) Mart. 1839. Krauss, n. 1191. (Fœmina latet).

Stems scarcely 5 inches long, extremely thin and weak. Leaves 3-4 lines long, ½-1 line broad; stipules acute, ½-1 line long. Flowers minute, yellow. Opposite to, or in the axils of the leaves, especially of the superior ones, there are generally seen a few sterile pedicels in the shape of minute filiform bodies terminated by a round brownish gland, exactly like those we observe in the axils of the bracts on the male inflorescence of *M. perennis*.

2. *M. bupleuroides*, n. sp.; glaberrima, basi suffrutescens, caulibus erectis, strictiusculis, ramosis, superne acute angulato-costatis; foliis alternis, subpetiolatis, lanceolatis, acutis, leviter et remotiuscule dentatis, triplinerviis, superioribus linearibus sæpius subintegerrimis; stipulis herbaceis, lanceolatis, subintegris v. basi inciso-serratis; floribus masculis axillaribus paucis aggregatis, brevissime pedicellatis (fœmineis ignotis).

In graminosis circa Port Natal (V. c.) Oct. 1839. Krauss, n. 1169. (Drège, n. 1867! and perhaps also his n. 1868 and 8223?).

This comes very near the preceding species, from which, however, it is sufficiently distinct by the characters above indicated. The leaves are often 10-12 lines long, 2-3 lines broad, their teeth short, scarcely acute, and from 1 to 2 lines distant from each other. The stipules attain the length of 2 lines, and generally bear two or three longish teeth on the margin near the base. The flowers are mingled with similar sterile pedicels as in *M. tenella*.

3. *M. serrata*, n. sp.; glaberrima; caule debili, diffuso, ramoso, basi suffrutescente? superne obsolete marginato-angulato; foliis alternis, petiolatis, acute serratis, inferioribus

subrhombeo-ovatis, superioribus lanceolatis; stipulis herbaceis, lanceolatis, fimbriato-serratis; floribus masculis terminalibus et in summis axillis aggregatis breviter pedicellatis, (fœmineis ignotis).

In arenis maritimis circa sinum Hout Bay (III. E. b.) Sept. 1838. Krauss, n. 1190.

A slender plant, about 1 foot high; leaves 6-8 lines long, with a petiole of nearly the same length, or, especially in the superior ones, shorter; inferior leaves 3-5 lines broad, and frequently scarcely longer; they are as variable in form as in size, being now cuneato-attenuate and acute at both ends, so as to approach the rhomboidal form, and now rounded at the base, or even at both ends, or nearly orbicular, whilst others, particularly the upper ones, are truly lanceolate, and the uppermost even linear. Their teeth are perfectly equal, small but very acute, and more or less evidently ciliato-mucronate. Stipulæ 2-3 lines long, 1 line broad, with thin serratures or cilia of nearly 1 line length, all along their margins. Flowers a little larger and more crowded than in the two preceding species.

4. *M. Caffra*, n. sp.; glaberrima, caulibus (ramisve?) herbaceis, rectis, articulatis, simplicibus; foliis oppositis v. ternatim verticillatis, petiolatis, ovatis, acuminatis, dense crenato-dentatis, ad basin limbi superne glandulas nonnullas filiformes minutas gerentibus; stipulis minutis, lacero-filiformibus; racemis (masculis) terminalibus, umbellato-aggregatis, pedunculatis, subaphyllis, erectis, interruptis, floribus aggregatis inæqualiter pedicellatis. (Fœmina ignota).

α. *brevipes*, foliis oppositis aut ternis, obtusiusculis, petiolo multo longioribus, infimis abbreviatis suborbiculatis basi rotundato-subcordatis, caule lævi, obsolete lineato.

Inter arundines prope flum. Umlaas, Port Natal. (V. c.) Dec. 1839. Krauss, n. 156.

β. *longipes*, foliis oppositis, longe attenuato-acuminatis petiolo vix v. parum longioribus, basi subtruncatis, caule acutiuscule sulcato-lineato.

In sylvis primitivis ad ripam fluminis Goukamma, distr. George (IV. C. b.), Feb. 1839. Krauss, n. 1192.—An species distincta? (*M. Drègeana* nob. olim.)

This species has the habit and inflorescence of *M. perennis*. Stems about one foot high, round, contracted (at least in the dry state) at the joints (nodi), with fistulose internodia of 1½-3 inches in length. Lamina of the leaves 1-1½ inch long, 8-11 lines broad near the base; the marginal teeth very equal and blunt, scarcely one line distant from each other, becoming insensibly smaller and more acute towards the base of the lamina; stipules not quite 1 line long. Without having seen more numerous specimens, and also of the female plant, we dare not decide whether our var. β. ought to form a distinct species.

(*To be continued*).

Enumeration of LEGUMINOSÆ, *indigenous to Southern Asia and Central and Southern Africa. By* GEORGE BENTHAM, ESQ.

(*Continued from p.* 481).

CROTALARIA.

Series 1. SIMPLICIFOLIÆ (*continued*).

§ 6. *Eriocarpæ.* Herbæ v. frutices erecta, sæpius elata et villosa, rarius humilia. Stipulæ nullæ v. non decurrentes. Racemi terminales, sæpius multiflori v. paniculati, rarius demum oppositifolii. Legumen adpresse v. velutino-pubescens v. villosum.—Species omnes hic enumeratæ.

The habit is usually that of the *Erectæ*, from which they are distinguished by the pod more or less hairy. A few of the smaller species come near to some of the *Diffusæ*, but are here placed on account of their erect stems with terminal inflorescence.

* *Racemis laxis, legumine sericeo v. piloso.*

32. C. *verrucosa* (Linn.!—W. et Arn.! Prod. 1, p. 187) —C. *mollis,* Weinm.? Syll. Pl. Rattisb. 2, p. 25.

Tropical Asia. Mauritius, *Telfair!* Ceylon, *Walker!* and others; East Indian Peninsula, *Heyne!* and others; Goalpara, *Hamilton!* Sillet de *Silva!* Chittagong and Burmese territory, *Wallich!* (Cat. n. 5392). Philippine Islands, *Cunning.!* n. 462, and others in the Pacific Islands, *Hind!* and others; in the West Indies, and in tropical South America (Surinam, *Hostmann!* n. 559).

33. C. *Wallichiana* (W. et Arn. Prod. 1, p. 187).—Unknown to me.

Nilgherry hills, *Wight.*

34. C. *Arnottiana.*—C. *semperflorens,* Wall.! Cat. n. 5391, W. et Arn.! Prodr. 1, p. 187 non Vent.—Arnott's characters of this and the following species are very exact, but it appears to me that he has mistaken Ventenat's synonym. The pod is expressly described by this author as stipitate, although the stipes are not shown in the figure to be long, and the foliage and habit are precisely those of the Ceylon plant.

Nilgherry hills, *Wight!* Mazaburam, *Sir F. Adam!*

35. C. *semperflorens* (Vent. Hort. Cels. t. 17).—C. *Walkeri,* Arn.! in Nov. Act. Acad. Nat. Cur. 18, p. 328.

Ceylon, *Wight! Walker! Macrae!* and others. Roxburgh inserts in his Flora Indica the C. *semperflorens* as a native of Sumatra, cultivated in the Calcutta garden, but it is doubtful whether he refers to the same species.

36. C. *Heyneana* (Grah.! in Wall. Cat. n. 5414).—W. et Arn.! Prodr. 1, p. 187.

East Indian Peninsula. Mysore and Travancore, *Heyne!*

37. C. *neriifolia* (Wall.! Cat, n. 5362), erecta, glaberrima, ramulis substriatis, stipulis obsoletis, foliis oblongo-lanceolatis mucronulatis sessilibus, racemis laxe plurifloris, bracteolis in medio pedicello bracteisque minutis setaceis, legumine (juniore) sessili adpresse piloso.—Species videtur elata.

Folia in specimine usque ad 4-5 poll. longa, fere nitida. Pedicelli tenues. Flores magnitudine C. *semperflorentis.*

Burmah territory, on the mountain called Taong Dong, *Wallich!*

38. C. *Leprieurii* (Guill. et Perr. Fl. Seneg. 1, p. 168),—Walp. Repert. Syst. 1, p. 590.—Unknown to me.

Senegambia. In the woods of the Walo region, *Leprieur and Perrottet.*

39. C. *Vogelii* (sp. n.); erecta, ramulis elongatis teretibus longe pilosis, foliis breviter petiolatis lineari-lanceolatis utrinque pilosis canescentibus, racemis remote plurifloris, bracteolis sub calyce bracteisque minutis, calycis membranacei laciniis subæquilongis tubum vix æquantibus, ovario stipitato villoso.—In plerisque cum descriptione C. *Leprieurii* convenit, sed ovarium stipite longo præditum nec sessile.

Tropical Africa. Stirling on the Quorra, *Vogel!*

40. C. *virgultalis* (Burch.! in DC. Prodr. 2, p. 128), glabra v. partibus junioribus foliisque subtus minute sericeis, ramulis junceis striatis, stipulis subnullis, foliis anguste oblongo-v. lanceolato-linearibus crassiusculis, racemis laxis plurifloris, bracteolis sub calyce v. supra medium pedicelli bracteisque minutis, calyce adpresse pubescente pedicello longiore, legumine sessili obovato-oblongo minute pubescente.—C. *spartioides,* E. Mey! Comm. p. 23, non DC.—Very near C. *spartioides,* but the leaves are broader, the pedicels shorter, and the general habit different.

South Africa, *Burchell!* Cat. Geogr. n. 1752; on the Gariep, near Verleptpram, *Drège!*

41. C. *spartioides* (DC! Prodr. 2, p. 128), glabra v. partibus junioribus calycibusque minute puberulis, ramulis tenuibus junceis striatis, stipulis subnullis, foliis lineari-subulatis, racemis elongatis plurifloris, bracteolis sub calyce v. supra medium pedicelli bracteisque parvis setaceis, calycibus pedicello subbrevioribus, legumine breviter oblongo sessili adpresse pubescente.

South Africa, *Burchell!* n. 2336; on the Rhinoster River, *Burke!*

42. C. *pusilla* (Heyne! W. et Arn.! Prodr. 1, p. 189).—Wall.! Cat. n. 5396. Herba parva, ramosissima, *Diffusis* affinis ubi collocaverunt Wight et Arnott, sed inflorescentia diu terminalis et rami plerique erecti videntur. Flores minimi.

East Indian Peninsula. Dindygul Hills, *Wight!*

* * *Racemis laxis, legumine dense fusco-velutino.*

43. C. *leptostachya* (sp. n.); caule erecto tetragono ad angulos hirsuto, stipulis minutis linearibus transversis, foliis oblongo-ellipticis lanceolatisve acutis supra glabris subtus hirtellis, racemis elongatis multifloris, pedicellis calyce adpresse pubescente brevioribus, bracteis bracteolisque minutis, corolla calycem æquante, legumine sessili brevi.—Flores dimidio minores quam in C. *juncea* cui affines. Calyx vix 4-lin. longus.

East India. In *Jacquemont's* collection, without any precise station.

44. C. *juncea* (Linn.! W. et Arn. Prodr. 1, p. 185).—Wall.! Cat. n. 5409. C. *Benghalensis,* Lam. Wall! Cat. n. 5395. C. *tenuifolia,* Roxb. Wall! Cat. n. 5368. C. *porrecta,* Wall.! Cat. n. 5363. C. *viminea var?* Wall.! Cat. n. 5397 *B.*

Very generally cultivated all over the southern parts of Asia, for the fibres of its bark, which may be called the hemp of India, *Roxburgh;* and, consequently, it is difficult to ascertain in which of the stations given it is indigenous. It occurs in most collections from the Peninsula, Upper India, and Bengal; in Upper Assam, *Jenkins!* in Burma, *Wallich!* and a specimen collected by *Fraser* on the Logan River, in Australia, appears to be the same.

45. C. *tetragona* (Roxb.! W. et Arn.! Prodr. 1, p. 185). Wall.! Cat. n. 5367, *A* to *C.*

Upper India. Kunawur, *Edgeworth!* Kheeree Pass, *Royle!* Lower Nipal, *Wallich! Roxburgh;* Assam, *Griffiths!* n. 499. All the Peninsular specimens which I have seen, are from gardens.

46. C. *obtecta* (Grah.! in Wall. Cat. n. 5372).—W. et Arn.! Prodr. 1, p. 185.—C. *tetragona var?* Wall.! Cat. n. 5367 *D.*

Nilgherry Hills, *Noton! Wight!*

*** *Racemis brevibus paniculatis, legumine fusco-villosissimo calyce multo longiore.*

47. C. *glabrescens* (sp. n.); caule erecto vix angulato brevissime sericeo-pubescente, stipulis lineari-subulatis parvis transversis, foliis breviter petiolatis obovali-ellipticis v. late oblongis junioribus utrinque sericeo-flavicantibus adultis supra v. utrinque glabris, racemis brevibus plurifloris subpaniculatis, pedicellis medio bracteolatis, calycibus ferrugineo-sericeis marginibus subrevolutis, legumine sessili dense fusco-villosissimo.—Affinis quidem C. *obtectæ,* sed racemi breviores, flores majores et pubes omnino diversa. Legumen bipollicare.

East Indian Peninsula. *Wight!*

48. C. *madurensis* (Wight! in Wall. Cat. n. 5376).—W. et Arn.! Prodr. 1, p. 184.

East Indian Peninsula. Nilgherry Hills, *Noton!* Madura Hills, *Wight!*

49. C. *subperfoliata* (Wight! in Wall. Cat. n. 5377).—W. et Arn.! Prodr. 1, p. 184.—Bracteæ et pedicelli sæpius, at non semper, opposita.

East Indian Peninsula. Dindygul Hills, *Wight!*

**** *Racemis brevibus paniculatis, legumine calyce breviore v. vix longiore.*

50. C. *fulva* (Roxb.! W. et Arn.! Prodr. 1, p. 183).—Wall.! Cat. n. 5375.

East Indian Peninsula. Mysore, *Roxburgh;* Nilgherries, Colemala, *Wight!*

51. C. *pulcherrima* (Roxb.!—W. et Arn.! Prodr. 1, p. 184).—Wall.! Cat. n. 5374.—C. *Berteriana,* DC.? Prodr. 2, p. 127.

East Indian Peninsula. Mysore, *Roxburgh, Wight!*—This and the preceding species appear to be in the botanic gardens

of the Mauritius and of some of the West Indian islands, and are occasionally sent in collections from those places, though not indigenous.

52. C. *candicans,* (W. et Arn. Prod. 1 p. 184).—Unknown to me.

Nilgherry Hills, *Wight.*

53. C. *lunulata* (Heyne! W. et Arn,! Prodr. 1, p. 183). —Wall! Cat. n. 5378.

Tanjore, *Heyne! Wight.*

54. C. *ramosissima* (Roxb.! W. et Arn.! Prodr. 1, p. 183). —C. *tomentosa,* Rottl.! Wall.! Cat. n. 5380.

East India. Interior of Bengal, *Roxburgh;* Peninsula, *Rottl.! Heyne!*

55. C. *paniculata* (Willd.—W. et Arn.! Prodr. 1, p. 183). Wall.! Cat. n. 5379. *Ononis glutinosa,* Mart. Denkschr. Acad. Mun. 6, p. 155.

East India. Peninsula *Heyne!* and others, hills near Vellore and Pathacottah, *Wight!* also in Java, *Lamarck.*

§ 7. *Calycinæ.* Herbæ sæpius humiles v. diffusæ, villosæ, rarius frutices erecti, ramosissimi, ramulis virgatis. Stipulæ nullæ v. non decurrentes. Racemi terminales, in paucis speciebus elongati multiflori, sæpius breves, nunc capitati, rarius demum oppositifolii. Calyces hirsutissimi v. sericeo-pilosi, sæpius ampli. Legumen glabrum, ovoideum v. breviter oblongum, calyce brevius v. paullo longius, rarissime calyce subduplo longiore.

The greater number of species are known by the long hairs which cover the calyxes. Some of the smaller diffuse species come very near the *Diffusæ,* but the inflorescence, if it becomes lateral, is only so when the flowering is far advanced.

* *Laciniis calycinis supremis profunde discretis.*

56. C. *speciosa* (Heyne, W. et Arn.! Prodr. 1, p. 182). C. *cephalotes,* Herb. Madr.! in Wall. Cat. n. 5373.

East Indian Peninsula. Mysore, *Wight!*

57. C. *calycina* (Schranck, Pl. Rar. Monac. t. 12), decumbens, v. suberecta, stipulis minutis, foliis oblongis lanceolatis

linearibusve supra glabris v. rariter pilosis, subtus cauleque adpresse pilosis, racemis terminalibus paucifloris, floribus pedunculatis pendulis inter se distantibus, calyce maximo longe rufo-barbato, laciniis superioribus late oblongis vexillum superantibus, ovario multiovulato, legumine sessili incluso.—C. *stricta*, Roxb.! Fl. Ind. 3, p. 265, non Roth. C. *Roxburghiana*, DC. Prodr. 2, p. 129. C. *anthylloides*, Don, Prodr. Fl. Nep. 241, Wall.! Cat. n. 5366 *A*, ex parte, W. et Arn.! Prodr. 1, p. 181, non Lam. C. *linearis*, Herb. Madr.! in Wall. Cat. n. 5370. C. *crinita*, Grah.! in Wall. Cat. n. 5408. C. *salicifolia var?* Wall.! Cat. n. 5359 *B*.—Folia latitudine magnopere variant. Flores inferiores nonnunquam axillares, omnes pedicellati. Calyces pollicares v. longiores. Corolla cærulea.

Tropical Africa and Asia. Senegambia, *Heudelot!* Ceylon, *Walker!* East Indian Peninsula, near Dindygul and Courtallum, *Wight!* Circar mountains, *Roxburgh!* Sukanaghur, *Hamilton!* Hot sunny situations in the Himalaya, *Edgeworth!* Nipal, *Wallich!* Assam, *Griffiths!* n. 501, Sillet *De Silva!* Taong Dong, near Ava, *Wallich!* Moka hills, near Canton, *Parker!* Near Macao, *Millet! Vachell!* Philippine Islands, *Cuming!* n. 1868. South Goulburn Island, on the north coast of Australia, *A. Cunningham!*

58. C. *occulta* (Grah.! in Wall. Cat. n. 5360), caule adscendente strigoso-villoso, stipulis subnullis, foliis elliptico-oblongis lanceolatisve supra parce pilosis glabrisve subtus adpresse rufo-villosis, racemis abbreviatis, floribus approximatis breviter pedicellatis, bracteis bracteolisque parvis setaceis, calycis breviter rufo-villosi laciniis superioribus late ovatis corolla longioribus, ovario multiovulato, legumine incluso glabro.—C. *rhizophylla* Grah.! in Wall. Cat. n. 5431. —Calyces magnitudine C. *sessilifloræ*, sed villis multo brevioribus appressis et laciniis supremis multo latioribus diversi.

East Indian province of Sillet, *De Silva!*

59. C. *sessiliflora* (Linn. Spec. p. 1004) adscendens, stipu-

lis setaceis obsoletisve, foliis oblongo-lanceolatis linearibusve supra glabris v. rariter pilosis subtus cauleque adpresse villosis, racemis terminalibus brevibus, floribus subsessilibus confertis, bracteolis sub calyce bracteisque subulatis, calycis barbato-villosi laciniis superioribus ovatis v. late oblongis corollam superantibus, ovario multiovulato, legumine glabro calycem æquante.—C. *anthylloides*, Lam. Dict. 2, p. 195, Wall.! Cat. n, 5366 *A* ex parte, *B*, *C*. C. *nepalensis* Link. Enum. Hort. Berol. 2, p. 228. C. *venusta*, Wall.! Cat. n. 5365.—Flores inferiores sæpe axillares, omnes quam in C. *calycina* dimidio minores. Corolla cærulea.

Mountains of South Eastern Asia. Himalaya, *Edgeworth!* Upper India, *Hamilton!* Assam, *Griffiths!* n. 502. Mishmee Hills, *Griffiths!* n. 20. Taong Dong, near Ava and Prome Hills, *Wallich!* Pena Hills, near Canton, *Parker!* Philippine Islands, *Cuming!* n. 1258. Java, *Lamarck.*

60. C. *mysorensis* (Roth. Nov. Spec. Pl. p. 338) adscendens, ramulis rufo-pilosis hirsutis, stipulis linearibus lanceolatisve, foliis oblongis linearibusve obtusis utrinque pilosis, racemis terminalibus remote paucifloris, bracteis bracteolisque foliaceis lanceolatis v. superioribus linearibus, floribus pedicellatis, calycis rufo-barbati laciniis lanceolatis corolla longioribus, ovario multiovulato, legumine late oblongo valde inflato calyce subduplo longiore.—C. *stipulacea*, Roxb. Fl. Ind. 3, p. 264.—Rami elongati virgati subdichotomi. Flores inferiores nonnunquam axillares. Calyces 7-8 lin. longi. Legumen pollicare.

East India. Mysore, *Heyne!* Courtallum, *Wight!* Near Madras, *Shuter!* Sadhaura plains, *Edgeworth!*

61. C. *chinensis* (Linn.! Spec. p. 1003) ramosissima, diffusa v. adscendens, stipulis parvis obsoletisve, ramulis rufo-hispidis, foliis infimis ovatis ellipticisve superioribus oblongis linearibusve obtusis utrinque rufo-pilosis hispidisve, racemis terminalibus abbreviatis, bracteolis sub calyce bracteisque lineari-lanceolatis, calycis hispidissimi laciniis superioribus lato-lanceolatis corollam superantibus, ovario multiovulato,

legumine ovoideo sessili calycem parum superante.—Calyx quam in C. *mysorensi* minor, C. *hirta* major. Legumen semi-pollicare, valde inflatum.

South East Asia. Tenasserim, *Helfer!* Sumatra, *Marsden!* Philippine Islands, *Cuming!* n. 1604.

62. C. *hirta* (Willd.—W. et Arn.! Prodr. 1, p. 182).—Mart. Denkschr. Acad. Mun. 6, t. F.—C. *chinensis*, Roxb.! Wall.! Cat. n. 5385 non Linn. C. *pilosa*, Rottl. Nov. Act. Nat. Cur. 1808. C. *diffusa*, Link.? Enum. 2, p. 228.

East India. Pasture grounds, borders of fields, etc. *Roxburgh! Wight!* and others.

63. C. *albida* (Heyne in Roth. Nov. Pl. Sp. p. 333) fruticosa v. cæspitosa, ramulis tenuibus virgatis appresse pubescentibus, foliis obovato- v. cuneato-oblongis linearibusve obtusis mucronatisve supra glabris v. parce pubescentibus subtus adpresse puberulis v. cano-sericeis, racemis plurifloris laxis secundis, bracteolis in calyce bracteisque minutis, calycis adpresse puberuli v. sericeo-villosi laciniis supremis falcato-oblongis profunde discretis corollam æquantibus, ovario sub-10-ovulato, legumine sessili oblongo glabro calyce subdimidio longiore.—C. *montana*, Roxb. Fl. Ind. 3, p. 265. C. *scoparia*, Wall.! Cat. n. 5418. C. *parva*, Grah.! in Wall. Cat. n. 5402. C. *tenuis*, Wall.! Cat. n. 5403. C. *punctata*, Grah.! in Wall. Cat. n. 5401 *A* et *E*. C. *leiocarpos*, Vogel? Leg. Meyen, p. 8, in Nov. Act. Nat. Cur. 19 Suppl.—Variat caule nunc humili suffruticoso cæspitoso, floribus numerosis paullo majoribus, nunc fruticoso erecto ramosissimo ramulis tenuibus adscendenti-virgatis, floribus remotioribus. Folia iis C. *linifoliæ* subsimiles at sæpius minora. Calyces circa 4 lin. longi.

Mountains of Southern Asia. Ceylon, *Walker!* and others. Nilgherries, *Wight! Sir F. Adam!* Circar mountains, *Roxburgh*, Himalaya, *Edgeworth!* From the Keyra ridge to Deyra Dhoun, *Jacquemont!* Kheree Pass, *Royle!* Near Sabathoo, *Lady Dalhousie!* Sukanaghur, *Hamilton!* Nipal, *Wallich!* Sillet, *de Silva!* Mishmee, Hills, *Griffiths!* n. 21. Tenasserim, *Helfer! Wallich!* Burma and Tavoy, *Wallich!* Cape

Syng Moon, in China, *Meyen*, Hong Kong, *Hinds !* Phillippine Islands, *Cuming !* n. 984.

Mr. Edgeworth observes that the low cæspitose form has so different an aspect from the more common shrubby state, that he thinks they cannot belong to the same species, but after a careful examination of numerous dried specimens, I cannot in that state discover any character to distinguish them, and there appear to me to be many forms intermediate as to stature.

64. C. *dubia* (Grah.! in Wall. Cat. n. 5404) adscendens, humilis, caule adpresse villoso, foliis obovato-oblongis basi longe angustatis utrinque molliter pilosis, racemis dense spicæformibus, bracteolis in calyce bracteisque lanceolatis acuminatis, calycis piloso-hirti laciniis superioribus lanceolatis acutis profunde discretis corollam æquantibus, ovulis circa 6, legumine ovoideo sessili calycem vix æquante.—Specimina juniora vix semipedalia. Folia 2-3 poll. longa, usque ad pollicem lata. Flores fere C. *hirtæ*.

East India, but the exact station lost; probably Sillet or Burma, *Wallich !*

65. C. *patula* (Grah ! in Wall. Cat. n. 5371) humilis, cæspitosa, suberecta, ramis adpresse pilosis, stipulis obsoletis, foliis anguste linearibus supra glabriusculis subtus sericeopilosis, racemis brevibus paucifloris, bracteolis sub calyce bracteisque subulatis, calycis piloso-hirti laciniis superioribus lanceolatis acutis tubo sublongioribus corollam æquantibus, ovario 6-8-ovulato, legumine ovoideo-globoso sessili calycem paullo superante.—Herba 3-4-pollicaris. Flores magnitudine C. *nanæ*. Legumina proportione longiora.

Burma territory, on the banks of the Irawaddy, near Yenanghuen, *Wallich !*

* * *Laciniis calycinis supremis alte connatis.*

66. C. *stenophylla* (Vog. Leg. Meyen, p. 7, in Nov. Act. Nat. Cur. 19, Suppl.) caule virgato-ramoso ferrugineo-pubescente, stipulis setaceis v. nullis, foliis anguste lineari-lan-

ceolatis acutiusculis supra glabris subtus appresse pubescentibus, racemo elongato multifloro, bracteis bracteolisque setaceis, floribus parvis pedicellatis, calycis adpresse rufo-villosi laciniis superioribus late oblongis alte connatis corollam superantibus, ovario multiovulato, legumine sessili calycem vix æquante.—Foliorum forma, floribus paullo minoribus et calycis laciniis superioribus latioribus a C. *linifolia* differt.

Philippine Islands, *Meyen, Cuming*! n 749.

67. C. *linifolia* (Linn. fil. W. et Arn! Prodr. 1, p. 190, excl. syn. C. *tectæ*), Wall.! Cat. 5400 *A* ex parte, C. *montana* Heyne! in Roth. Nov. Pl. Sp. p. 335, Wall.! Cat. n. 5384 non Roxb. C. *cæspitosa,* Roxb. Fl. Ind. 3, p. 269. C. *sobolifera,* Grah.! in Wall. Cat. n. 5420 A.—A C. *nana* differt racemis elongatis, a C. *tecta* floribus minoribus et legumine subgloboso.

East India. One of the most common all over the coast, *Roxburgh.* Peninsula, *Heyne!* Near Poonah, *Sykes! Jacquemont!* Also Goulburn Island, on the northern coast of Australia, *Cunningham!*

68. C. *tecta* (Roth. Nov. Sp. p. 334) C. *viminea,* Grah.! in Wall.! Cat. n. 5397 *A.* W. et Arn.! Prodr. 1, p. 189. C. *linifolia var.?* Wall.! Cat. n. 5400 *B.* C. *punctata, var.* Grah.! in Wall. Cat. n. 5401 *B.*—Flores quam in C. *linifolia* multo majores. Specimina cum descriptione Rothiana C. *tectæ* multo melius quam illa C. *linifoliæ* quadrant.

East Indian Peninsula, *Heyne!* Courtallum and Madura, *Wight!*

69. C. *melanocarpa* (Wall.! Cat. n. 5382) cæspitosa, a basi ramosa, ramis adscendentibus sericeo-pilosis, stipulis subnullis, foliis oblongo-linearibus obtusis supra glabris pilosisve subtus dense sericeo-pilosis, racemis interrupte plurifloris, bracteis bracteolisque setaceis, calycis pilosissimi laciniis supremis oblongis alte connatis corollam æquantibus, ovulis circa 10, legumine subgloboso calyce parum breviore.—Species hinc C. *linifoliæ* hinc C. *nanæ* affinis et forte hujus forma

vegetior, tamen, ex speciminibus paucis a me visis, ab utraque distincta videtur.

Burma territory, on the banks of the Irawaddy, and in Prome, *Wallich !*

70. C. *nana* (Burm. Fl. Ind. p. 156, t. 48. f. 2. W. et Arn.! Prodr. 1, p. 191).—C. *umbellata*, Wight ! in Wall. Cat. n. 5383, W. et Arn. ! Prodr. 1, p. 191. C. *biflora*, Herb. Madr.! in Wall Cat. n. 5381 non Linn. C. *sobolifera var ?* Wall. ! Cat. n. 4520 *B.*

East India, common in the southern provinces, *Wight !* Ceylon, *Walker !* This plant does not appear to be noticed in the Flora Indica of Roxburgh, who perhaps included it with the C. *linifolia* in his C. *cæspitosa.*

Amongst the remaining published simple-leaved *Crotalariæ*, C. *Burmanni* (DC. Prodr. 2, p. 126) taken up from the C. *sericea* (Burm. Fl. Ind. p. 156, t. 48, f. 1), is a very doubtful plant. De Candolle, who saw Burmann's specimen, doubts if it be distinct from C. *tecta* (which he had not seen), but Plukenet's synonym, quoted by Burmann, must belong to some plant allied to C. *juncea*, on account of the "siliqua *ferruginea*." Burmann's figure does not look like any East Indian species known to me, but (making allowance for an evidently reduced scale) it is not unlike the American C. *nitens.* Wight and Arnott have overlooked it.

C. *leioloba* (Bartl. Ind. Sem. Hort. Gott. 1837 ex Linnæa 12, Littbl. p. 80), is probably the C. *ferruginea* (supra p. 476), to the stations of which species must be added Assam, *Griffiths !* n. 503.

C. *Novæ Hollandiæ* (DC. Prodr. 2, p. 127), from his character should perhaps be referred to the *Foliolate* series, with the leaves as in C. *unifoliolata* reduced to a single foliole, but the species is altogether doubtful.

C. *scandens* (Lour. DC. Prodr. 2, p. 129) is most probably no *Crotalaria* at all.

C. *procumbens* (DC. Prodr. 2, p. 129), taken up from a drawing of Moçino and Sessé's is probably some species of the group of *Alatæ*, imperfectly figured as to the inflorescence.

C. *acuminata* (DC. Prodr. 2, p. 128) of which I have seen a small specimen of Dr. Burchell's with a single flower, is certainly not a *Crotalaria*. In this specimen one of the leaves is pinnately trifoliate, the others are unifoliate. The plant has the appearance and the leaves the venation of a *Tephrosia*, but the carina is spirally twisted, as in *Phaseolus*, to which genus it certainly does not belong. It probably forms a new genus; but the specimen is insufficient to describe it.

Series II, FOLIOLATÆ. *Foliola ad apicem petioli articulata, in* § 8 *ad* 17 *terna v. rarius solitaria, in* § 18 *plurima v. omnia quina vel septena.*

§ 8. *Chrysocalycinæ.* Racemi terminales dense spiciformes v. capituliformes. Legumen oligospermum, globosum v. ovoideum, calyce demum aucto brevius v. vix longius. Foliola sæpe inæqualia v. interdum solitaria, petiolo abbreviato.—*Chrysocalyx*, Guillem. et Perrot.—Species omnes hic enumeratæ.

In some species of this group, as in C. *paniculata* and some others allied to it, the young pod is slightly compressed, especially at the apex, but not sufficiently so to remove them from the genus. All other characters appear to me to be precisely those of Crotalaria.

71. C. *Perrottetii* (DC. Prodr. 2, p. 128).—*Chrysocalyx Perrottetii* Guillem. et Perrott. Fl. Seneg. 1, p. 160, t. 43, f. 2. —A me non visa.

Tropical Africa. Sandy hills of the kingdom of Walo, near Kouma, Lamsar, etc. *Leprieur and Perrottet.*

72. C. *gracilis* (Walp. Repert. 1, p. 591)—*Chrysocalyx gracilis*, Guillem. et Perrott.! Fl. Seneg. 1, p. 159.

Tropical Africa. Sandy hills of the kingdom of Walo, near Kouma, Lamsar, etc. *Leprieur and Perrottet!* In the Cayor, *Heudelot!*

73. C. *ebenoides* (Walp. Repert. 1, p. 590).—*Chrysocalyx ebenoides*, Guill. et Perott.! Fl. Seneg. 1, p. 158, t. 43, f. 1.

Tropical Africa. Sandy situations in Walo, near Dagana, *Leprieur and Perrottet!* Galam and in the Sahara, *Heudelot!*

74. C. *iodina.*—*Chrysocalyx rubiginosa,* Guill. et Perrott. Fl. Seneg. 1, p. 158.—A me non visa.

Tropical Africa. Sandy situations at Lamsar, near Saint Louis, *Leprieur and Perrottet.*

75. C. *macrocalyx* (sp. n.), decumbens v. adscendens, stipulis lineari-subulatis, petiolo brevissimo, foliolis inæqualibus oblongo-ellipticis lanceolatisve supra glabris subtus cauleque adpresse pilosis, racemis densis capitatis paucifloris, bracteolis lineari-subulatis calyce villoso brevioribus, ovulis sæpius 6, legumine ovoideo dense ferrugineo-villoso calyce valde aucto breviore.—Habitu C. *atrorubenti,* foliis C. *ebenoidi* accedit. Capitula subglobosa 4-6-flora, intra folia suprema sessilia v. pedunculo pollicari insidentiæ. Calyces per anthesin vix 4 lin. longi, fructiferi duplo majores.

Tropical Africa, *Heudelot!* in Herb. Hook.

76. C. *ononoides* (sp. n.), herbacea, diffusa, ramulis laxe pilosis, stipulis parvis lineari-subulatis, petiolo brevi, foliolis oblongo-ellipticis lanceolatisve acutis mucronulatisve supra glabris subtus adpresse pubescentibus, racemis plurifloris globoso-capitatis, bracteis lineari-subulatis calyce longioribus, calycis villosi laciniis lanceolato-subulatis corollam æquantibus, ovario pauciovulato.—Capitula intrafolia suprema sessilia ad apices ramorum brevium axillarium.

Sierra Leone, *G.Don!*

77. C. *atrorubens* (Hochst.! Herb. Un. Itin. Nub. n. 265), diffusa, ramosissima, stipulis lineari-subulatis, petiolo brevi, foliolis cuneato-oblongis obtusis supra glabris subtus ramulisque pilis longis laxis subcanescentibus, racemis subglobosis paucifloris, bracteolis setaceis calyce brevioribus, calycis pilosissimi laciniis lanceolato-subulatis, ovulis 8-10, legumine oblongo-conoideo apice piloso calycem paullo auctum superante.

Tropical Africa. Amongst thickets of *Zizyphus,* near the town of Obeid in Cordofan, *Kotschy!*

§ 9. *Oliganthæ.* Herbæ, sæpius diffusæ, rarius suffrutices. Pedunculi omnes v. plerique oppositifolii, laxe 1-3-flori, rarissime 4-5-flori. Carinæ rostrum longiusculum, rectum v. leviter falcatum. Ovarium multiovulatum. Legumen obovoideum v. oblongum.—Species omnes hic enumeratæ.

The first two or three species of this group come near to the *Chrysocalycinæ ;* some of the latter ones to the *Longirostres*, from both of which they are distinguished by the very small number of flowers on the peduncles, and from the former by the inflorescence, which by the time the flowers expand, is already leaf-opposed. The numerous ovules remove them from the *Dispermæ*, which the C. *stipitata* approaches in habit. Many of the South African species have the habit of the *Lotononides* of the section *Telina*, but the long sharp keel marks them very distinctly.

78. C. *microcarpa* (Hochst! Herb. Un. Itin. Pl. Nub. n. 97), diffusa, ramosissima, stipulis minutis, foliolis cuneato-oblongis obtusiusculis supra glabris subtus ramis calycibusque longiuscule sericeo-pilosis, petiolo communi brevissimo, racemis oppositifoliis 2-4-floris, carinæ rostro recto, ovulis circa 8, legumine subsessili obovato-oblongo sericeo pubescente.—Herba dichotome ramosissima, floribunda. Flores parvuli. Legumen 2-3 lin longum.

Tropical Africa. Sandy situations on Mount Arraschkool, in Cordofan, *Kotschy!*

79. C. *sparsiflora* (E. Mey.! Comm. p. 26), pumila, diffusa, stipulis parvis obsoletisve, foliolis obovatis utrinque cauleque sericeo-canescentibus, pedicellis oppositifoliis unifloris, carinæ rostro recto, ovario multiovulato, legumine sessili oblongo sericeo calycem non excedente.—Accedit hinc C. *microcarpæ*, a qua indumento et floribus solitariis facile distinguitur, hinc *Lotononidibus* sectionis *Oxydii*, sed (prout in specimine unico apparet), ob carinam longe rostratam et legumen junius turgidum, potius inter *Crotalariis* enumero.

South Africa. On the Gariep, near Verleptpram, *Drège!*

80. C. *microphylla* (Vahl. Symb. 1, p. 52), humilis, pros-

trata, a basi ramosa, stipulis minutis, foliolis parvis obovatis oblongisve supra glabris subtus ramulisque adpresse puberulis, racemis brevissimis 1-2-floris oppositifoliis, carinæ rostro recto, ovario multiovulato, legumine brevissime stipitato oblongo glabriusculo.—C. *pumila*, Hochst. et Steud.! Herb. Un. Itin. Pl. Arab. n. 778.—Rami tenues, semipedales ad pedales, paucifoliati. Legumen 4-5 lin. longum, stipite calyce multo breviore.

Arabia, *Forskohl.* Sandy plains of Gedda, *S. Fischer!* n. 65, *Schimper!*

81? C. *impressa* (N. ab Esenb. Ind. Sem. Hort. Vratisl. 1841).—C. *striata*, A. Braun, Flora 1841, 1, p. 280, N. ab Esenb. Linnæa 16, p. 217 non DC.—Species mihi ignota, an revera hujus loci?

Abyssinia. Raised in the Carlsruhe garden, from Abyssinian seeds.

82. C. *humilis* (Eckl. et Zeyh.! Enum. p. 174), humilis, diffusa, a basi ramosissima, ramulis tenuibus puberulis glabratisve, stipulis minutis, foliolis petiolo brevioribus obovatis oblongis v. supremis linearibus subtus appresse puberulis, pedunculis oppositifoliis elongatis 1-2 floris, carinæ rostro subrecto, ovulis numerosis, legumine subsessili oblongo-cylindraceo minute appresse puberulo.—C. *diffusa*, E. Mey.! Linnæa 7, p. 151 non Link. *Lotononis diffusa*, Eckl. et Zeyh.! Enum. p. 177. *Crotalaria effusa*, E. Mey.! Comm. p. 25 ex parte. C. *stenophylla*, Eckl. et Zeyh.? Enum. p. 174, non Vogel.—Legumen 6-7 lin. longum.

South Africa. Near Cape Town, *Ecklon and Zeyher! Harvey!* and others. Paarl and Groenekloof, *Drège!* Sandy situations on the Oliphant's River, in Clanwilliam, *Ecklon and Zeyher!*

83. C. *effusa* (E. Mey.! Comm. p. 25 ex parte), humilis, diffusa, a basi ramosissima, stipulis parvis, foliolis petiolo brevioribus obovatis subtus ramulisque minute appresso-puberulis, pedunculis terminalibus v. demum oppositifoliis elongatis laxe 3-6-floris, carinæ rostro subrecto, ovulis numerosis,

legumine subsessili oblongo valde inflato adpresse pubescente.—Legumen 8-9 lin. longum. Species C. *molli* affinior quam C. *humili* videtur.

South Africa. Sands near Krakkeelskraal, *Drège!*

84. C. *mollis* (E. Mey.! Comm. p. 23), diffusa, a basi ramosissima, stipulis parvis, foliolis obovatis supra glabriusculis subtus caulibus racemis calycibusque molliter pilosis, pedunculis terminalibus demum oppositifoliis laxe 3-6-floris, carinæ rostro rectiusculo, ovulis numerosis, legumine subsessili oblongo valde inflato molliter villoso.—Legumen 8-10 lin. longum. Species ex habitu hujus loci, etsi racemi diutius terminales et flores numerosi.

South Africa. Dry hills and islands at the mouth of the Gariep, *Drège!*

85. C. *lotoides* (sp. n.), humilis, subdichotome ramosissima, ramulis ferrugineo-pubescentibus et patentim pilosulis, stipulis lineari-lanceolatis parvis, foliolis obovatis subtus v. utrinque pilosis, pedunculis oppositifoliis folio parum longioribus 1-2-floris, calyce pilosulo, carinæ rostro rectiusculo, legumine subsessili cylindraceo piloso-hirto.—C. *obscuræ* affinis sed pluribus notis distincta. Habitus rigidior et ramosior. Caules, tanquam e specimine sicco dijudicare potes, prostrati videntur. Legumen pollicare v. paullo longius.

South Africa. Macalisberg and Aapges River, (in the interior to the north east of the colony), *Burke!*

86. C. *obscura* (DC. Prodr. 2, p. 134), decumbens v. diffusa, a basi ramosa, pilis longis patentibus rufo-hispida, stipulis lineari-lanceolatis, foliolis late obovatis subtus v. utrinque longe pilosis, pedunculis terminalibus v. oppositifoliis elongatis 2-5-floris, calyce piloso-hispido, carinæ rostro falcato, legumine sessili oblongo piloso-hispido.—C. *pilosa*, Thunb. Fl. Cap. p. 572 non Mill.—Legumen 1-1½-pollicare.

South Africa. Grassy pastures in Uitenhage district and from thence to the Omsamwubo in Cafferland, *Drège! Ecklon* and *Zeyher!* and others; in the interior near Salad-Kraal, *Burke!*

β collina (Eckl. et Zeyh.!), foliolis infimis ovatis superioribus lanceolatis, omnibus obtusis.

Grassy pastures on the borders of woods on the hills near Oliphantshoeck in Uitenhage, *Ecklon* and *Zeyher !*

87. C. *angustissima* (E. Mey.! Comm. p. 26), diffusa, a basi ramosissima, stipulis minutis, foliolis longissime petiolatis subulatis v. foliorum superiorum lineari-cuneatis subtus cauleque puberulis, pedunculis elongatis apice 1-2-floris, legumine breviter stipitato oblongo puberulo.—Legumen 8-10 lin. longum. Corollas non vidi, ex E. Meyer incarnatæ sunt.

South Africa. Sandy hills near Ebenezer in the Stellenbosch district, *Drège !*

88. C. *spinosa* (Hochst! Herb. Un. Itin. Pl. Abyss. n. 150), diffusa, rigida, ramosissima, foliis subfasciculatis, stipulis minutis, foliolis obovatis v. cuneato-oblongis obtusis emarginatisve supra glabris subtus ramulisque minute puberules, ramulis floriferis brevibus basi foliosis medio 1-2-floris apice nudis spinescentibus, carinæ rostro longo recto, ovario multiovulato, legumine sessili obovoideo-oblongo minute puberulo.—Habitu *Ononidibus* spinescentibus accedit. Legumen 4-5 lin. longum.

Tropical Africa. Kingdom of Fazokal, *Kotschy !* n. 552, near Genni in the district of Memsach in Abyssinia, *Schimper !*

β pubescens, pube densiore, foliolis paullo angustioribus. *Ononis emarginata*, Bojer ! MS.

Madagascar, *Bojer ! Lyall !*

89. C. *lævigata* (Lam. Dict. 2, p. 198), diffusa(?) v. adscendens(?), ramulis minute puberulis, stipulis minutis obsoletisve, foliolis obovato-oblongis obcordatisve supra glabris subtus minute puberulis, racemis oppositifoliis laxe subtrifloris, carinæ rostro longo recto, ovulis 10-12, legumine stipitato oblique obovoideo glabriusculo.—C. *stipitata*, Grah.! in Wall. Cat. n. 5425, *B.* W. et Arn.! Prodr. 1, p. 193.

Madagascar, *Commerson* according to *Lamarck.* Cultivated in the Calcutta Garden, *Wallich !*

β villosior, foliis minoribus.

Mozambique, *Forbes!*

§ 10. *Dispermæ*. Ovarium biovulatum. Legumen sessile subglobosum.—*Cyrtolobus*, R. Br. teste Wall. Cat. n. 5432.—Species omnes hic enumeratæ.

The species of this group are easily known by their biovulate ovarium and on that account have been considered by some as a distinct genus or subgenus. But the same character occurs among some simple-leaved *Crotalarias* belonging to different groups, and a gradual passage may be traced from the depressed globose pod of the first species of the *Dispermæ*, through the ovate-globose pod of the latter species, to the globose podded *Longirostres* some of which have but two pair of ovules.

* *Medicagineæ*, legumine oblique depresso-globoso. Suffrutices v. herbæ perennes a basi ramosissimæ, diffusæ adscendentes v. erectæ. Folia et flores parva.

90. C. *rigida* (Heyne, W. et Arn. Prodr. 1, p. 191).—Species mihi ignota.

East Indian Peninsula. Vellangany near Negapatam on sandy soil, *Wight*.

91. C. *herniarioides* (W. et Arn.! Prodr. 1. p. 192).—C. *procumbens*, Wall. Cat. n. 5437, *G* ex parte. Icon. C. *virgatæ*, Mart. Denkschr. Acad. Munch. v. 5. t. G hanc speciem repræsentat, at descriptio l. c. p. 157, potius C. *neglectam*, refert. Species habitu, C. *medicagineæ* similis et vix differt foliolis minoribus latioribus crassis. An ejus var. maritima?

East Indian Peninsula. Sandy soil near Arcot, *Wight!* Madras, *Griffiths!*

92. C. *medicaginea* (Lam. Dict. 2. p. 201, W. et Arn.! Prodr. 1, p. 192).—C. *procumbens*, Roxb. Fl. Ind. 3, p. 278. Wall.! Cat. n. 5437, *C, D, F, G* ex parte. C. *divaricata*, Grah.! in Wall. Cat. n. 5436. C. *foliosa* Willd. Enum. p. 747.—Perennis. Rami graciles, prostrati. Habitus fere *Medicaginis laciniatæ* v. M. *coronatæ* inter annuis, v. M. *leiocarpæ* inter perennibus. A sequentibus differt pedunculis 1-2-rarius 3-4-floris.

East Indian Peninsula, common in dry places, borders of fields, etc., *Heyne! Wight! Jacquemont!* and others.

The several species of this group appear to have been confounded by most authors under the names of C. *medicaginea, procumbens* or *virgata* and of C. *trifoliastrum.* Lamarck probably included under C. *medicaginea,* and Martius under C. *virgata,* all the small flowered species, viz: C. *herniarioides, medicaginea, neglecta* and *luxurians.* Roxburgh's C. *procumbens,* must have comprised the three first only, which must all have been known to him, and his C. *trifoliastrum* probably included both the small-flowered C. *luxurians* and the true large-flowered C. *trifoliastrum,* which are both tall, erect plants with the habit of *Medicago sativa.* The plants distributed by Dr. Wallich were so hastily sorted, in order not to delay the distribution, that the references to his catalogue, taken only from the set I have before me, may not be exact as to all the sets sent out.

93. C. *neglecta* (W. et Arn.! Prodr. 1, p. 192).—C. *procumbens,* Wall.! Cat. n. 5437, *A. B. E. I.* et Roxb.? ex parte. Perennis, prostrata, at sæpius C. *medicagineæ* major, foliosior. Flores ut in hac parvi, sed in racemo ultra 6, sæpius 10-12 et ultra.

East India, apparently with a much more extended range than the last. Nouchera, *Jacquemont!* Peninsula, *Wight!* Upper India, both in the plains and in the Himalaya, *Edgeworth!* Hindustan and Burmah territory, *Wallich!* Australia (North Coast?) *Bauer!*

94. C. *luxurians* (sp. n.), suffruticosa, erecta, ramis striatis, foliosis adpresse villosis, stipulis parvis setaceis, foliolis oblongis obtusis emarginatisve petiolo longioribus supra glabris subtus adpresse pubescentibus, racemis dense multifloris, bracteis subulatis pedicello sublongioribus, floribus parvis, vexillo puberulo.—C. *medicaginea,* Ham! in Wall. Cat. n. 5434.—Species a C. *neglecta,* cui floribus similis, differt caule pluripedali erecto, foliolis sæpius pollicaribus v. longioribus, floribus numerosioribus magis confertis. Habitus fere *Medicaginis sativæ.*

East India. Abundant in plains and fields of Northern India, *Edgeworth!* Isle of Salcette near Bombay and Poonah, *Jacquemont!* Monghyr, *Hamilton!*

95. C. *Willdenowiana* (DC. W. et Arn.! Prodr. 1, p. 191.)—C. *spartioides*, Spr. Wall.! Cat. n. 5435. C. *genistoides*, Willd. Sp. 3, p. 987.—Flores paullo minores quam in C. *trifoliastro*, duplo tamen majores quam in procædentibus.

East Indian Peninsula, *Heyne! Wight!*

96. C. *Notonii* (W. et Arn.! Prodr. 1, p. 192).—C. *trifoliastrum*, Wall.! Cat. n. 5432, *G.*—Ex specimine unico fructifero vix a C. *trifoliastro* differre videtur, Wight et Arnott tamen, qui specimina perfecta examinaverunt pro speciem bene distinctam habent.

Nilgherry Hills. *Noton! Wight.*

97. C. *trifoliastrum.* (Willd. W. et Arn.! Prodr. 1, p. 191). Wall.! Cat. n. 5432, excl. *G.* et *H.*

East Indian Peninsula, *Wight!* and others.

98. C. *rostrata.* (W. et Arn. Prodr. 1, p. 191).—Species mihi ignota.

East Indian Peninsula, *Wight.*

C. *micrantha* (Link. DC. Prodr. 2, p. 134), is probably one of the foregoing species, but the character is insufficient to determine it.

** *Sphærocarpæ,* legumine oblique ovoideo-globoso. Suffrutices v. frutices.

99. C. *sphærocarpa* (Perrott! in DC. Prodr. 2, p. 133.) adscendens v. erecta a basi ramosa, ramulis elongatis virgatis apice paniculatis vix puberulis, foliolis lineari v. oblongo-cuneatis petiolo communi longioribus, racemis gracilibus multifloris, legumine glabro v. puberulo.

Tropical Africa. Sandy Hills of the Walo country, *Perrottet!* On the Rio Nuñez and on the Falemia, *Heudelot!*

100. C. *uncinella*, (Lam. Dict. 2, p. 200) fruticosa, ramis fulvo-villosis, foliolis oblongis utrinque angustatis supra glabris subtus fulvo-sericeis, racemis terminalibus dense multifloris, legumine dense rufo-villoso.

Madagascar, *Lyall!* Mountains of Antoungoun, *Bojer!*

101. C. *elliptica*, (Roxb.! Fl. Ind. 3, p. 279) suffruticosa, ramis divaricatis pubescentibus, stipulis parvis ovato-lanceolatis, foliolis ovali-ellipticis obovatis v. rarius oblongis petiolo vix longioribus supra glabris subtus sericeis, racemis plerisque oppositifoliis multifloris, legumine adpresse pubescente.—Wall.! Cat. n. 5433. C. *Vachellii*, Hook. et Arn.! Bot. Beech. p. 180. C. *splendens*, Vogel, Leg. Meyen! p. 8, in Nov. Act. Nat. Cur. v. 19. Suppl.

South China. Hills about Canton, Macao and the adjacent islands, *Parker! Vachell! Hinds! Meyen!* etc. Cochinchina, *Gaudichaud!*

§ 11. *Longirostres.* Herbæ diffusæ v. erectæ, rarius frutices divaricato-ramosi. Stipulæ parvæ, lineares v. setaceæ. Racemi oppositifolii, rarius terminales, multiflori. Calycis laciniæ tubo longiores lanceolatæ, laterales sæpius liberæ corolla breviores. Vexillum reflexo-patens. Carina longe et recte rostrata, margine sæpissime glabra. Ovula 4 v. plura. Legumen ovoideum v. breviter oblongum, pollice brevius v. rarius longius, glabrum v. pubescens nec piloso-hispidum.

The first species of this group come near to the last of the *Oliganthæ*, and to the *Dispermæ sphærocarpæ;* from the former they differ by their many-flowered racemes, from the latter by the ovules always more than two. From these a gradual passage may be traced to the C. *acapulcensis* which comes near to the *Fruticosæ*, but which I have retained among the *Longirostres* on account of the leaf-opposed racemes, long-beaked keel, the stipules more evident than usual among the *Fruticosæ*, and the general habit nearer to the former group. The longirostres are easily known from the *Macrostachyæ* by the straight-beaked keel, from the *Stipulaceæ* by the small narrow stipules, from most of the *Incanæ* by the pod which is either smooth or clothed with a short usual silky pubescence, and in most cases by the presence of stipules, and from all by the long beak of the keel.

102. C. *polycarpa* (sp. n.), herbacea, divaricato-ramosa, glaberrima, stipulis parvis linearibus, foliolis cuneato-oblongis obtusis petiolo communi paullo longioribus, racemis oppo-

sitifoliis gracilibus multifloris, ovulis 4, legumine sessili parvo obovoideo glaberrimo.—C. *sphærocarpæ* affinis sed ovula constanter 4 et legumen longius (fere 2 lin. longum). Habitus rigidior, ramosior.

Western Tropical Africa. Common in the Cayor, *Heudelot !*

103. C. *nubica* (sp. n.), herbacea, divaricato-ramosa, piloso-pubescens, stipulis parvis lanceolatis, foliolis oblongo-linearibus supra glabris subtus adpresse pubescentibus, racemis oppositifoliis gracilibus multifloris, ovulis 4-6, legumine sessili parvo obovoideo pubescente.—C. *sphærocarpa var. angustifolia,* Hochst! Herb. Un. Itin. Pl. Arab. n. 282. Habitus et legumen C. *polycarpæ,* differt foliis et pube.

Eastern Tropical Africa. Amongst corn near Obeid in Cordofan, *Kotschy !* At Delagoa Bay, *Forbes !*

104. C. *globifera* (E. Mey. ! Comm. p. 24), herbacea, virgato-ramosa, plus minus puberula, stipulis setaceis obsoletisve, foliolis cuneato-oblongis supra glabris subtus plus minus adpresse pubescentibus, racemis terminalibus brevibus multifloris, ovulis 4, legumine stipitato oblique obovoideo subgloboso adpresse pubescente. A reliquis *Longirostribus* differt inflorescentia terminali, cœterum habitu et legumine (duplo tamen majore) C. *polycarpæ* valde affinis.

South east Africa. Cafferland between the Omsamcaba and the Omsamwubo and near Port Natal, *Drège ! Krauss !* n. 341 and 440, also *Burchell's* n. 2519 ! appears to be the same.

β ? brachycarpa, legumine valde obliquo depresso-globoso vix quam in C. *polycarpa* longiore.

Macalisberg to the north east of the Cape colony, *Burke !*

105. C. *Emirnensis* (sp. n.), caule herbaceo virgato-ramoso aureo-pubescente, stipulis setaceis obsoletisve, foliolis pubescentibus, racemis oppositifoliis brevibus multifloris, ovario stipitato puberulo, ovulis circa 8.—Habitu C. *globiferæ* accedit, at villosior et superne sæpius flavescens, inflorescentia et ovario facile distincta.

Madagascar, in the province of Emirna, *Herb. Hooker !*

106. C. *senegalensis* (Bacl. in DC. Prodr. 2, p. 133), herbacea, divaricato-ramosa, stipulis setaceis, foliolis elliptico-oblongis rarius ovalibus v. linearibus obtusis supra glabris subtus ramulisque pube tenuissima subcanescentibus, racemis oppositifoliis elongatis multifloris, floribus distantibus, ovulis 10-12, legumine sessili obovoideo valde inflato pubescente. —C. *macilenta*, Delile Cent. Pl. Afr. p. 35, t. 3, f. 2.—Flores in racemo 10-30. Legumen 4-5 lin. longum.

Tropical Africa. Common in moist sandy situations, Cape Verd and Walo country, *Leprieur* and *Perrottet!* In the Island of Sor and marsh of N'Boro, *Brunner!* n. 30. In the Kingdom of Sennaar and Cordofan, *Kotschy!* n. 27 and n. 303, and n. 24 of the Unio Itinerariæ Nubian collection. At Sennaar where it is called Fertuga and eaten by camels, *Caillaud.*

107. C. *distans* (sp. n.) herbacea, erecta v. adscendens, stipulis setaceis, foliolis oblongo-linearibus obtusis mucronulatisque supra glabris subtus ramulisque tenuissime pubescentibus, racemis oppositifoliis remote 2-6-floris, ovulis numerosis, legumine sessile ovoideo oblongo pubescente.—C. *senegalensi* affinis sed elatior, foliola angustiora et legumen majus, 6-8 lin. longum.

South Africa. Lay Spruit and Tal river to the north east of the Colony, *Burke!*

108? C. *laburnifolia* (Linn.! W. et Arn.! Prodr. 1, p. 193), Wall.! Cat. n. 5424.—A very distinct species with the flower of the *Longirostres,* but with a much more open calyx, a large smooth pod borne on a very long stalk and no stipules. If any other species were known with the same characters a distinct group should be formed for them.

East India. Common on the southern parts of the coast, *Roxburgh,* Malacca, *Cuming!* n. 2282.

[Among the American species I should refer the following to this group: 1. C. *Galeotti,* sp. n., minute puberula, stipulis setaceis recurvis, foliolis linearibus acuminatis acutis supra glabris subtus adpresse puberulis, racemis oppositifoliis laxiuscule 10-12-floris, vexillo pubescente, carina glabra, ovulis numerosis, legumine sessili obovoideo-oblongo pubescente. Folia fere C. *distantis*, habitus et legumen C. *lupulinæ*, Mexico near the Pacific, *Galeotti !* n. 3173. 2. C. *lupulina*, Humb. et Kunth., (C. *dichotoma*, Grah.) Mexico and West Indies. 3. C. *littoralis*, Humb. et Kunth., West Indies. 4. C. *cubensis*, DC., Cuba. 5. C. *setifera*. DC., Mexico. 6. C. *pumila*, Ort., Cuba, (the three last unknown to me but probably very near C. *littoralis* and *lupulina*). 7. C. *Tepicana*, Hook. et Arn., Mexico. 8. C. *longirostrata*, Hook. et Arn., Acapulco. 9. C. *Maypurensis*, Humb. et Kunth., (C. *acapulcensis*, Hook. et Arn.), Mexico, Guatemala and Columbia.]

§ 12. *Farctæ.* Habitus *Macrostachyarum.* Legumen nitus lana repletum. Species unica.

109. C. *lupinoides* (Hochst. ! Herb. Un. Itin. Pl. Nub. n. 41), herbacea, divaricato-ramosa, stipulis obsoletis, petiolis elongatis, foliolis elliptico-oblongis obtusis supra glabris subtus ramulisque pube tenui subcanescentibus, racemis elongatis multifloris demum oppositifoliis, carinæ latæ rostro falcato, ovulis numerosis, legumine breviter stipitato oblongo falcato extus pubescente intus lana repleto.—Racemi sæpe pedales. Legumen 8-10 lin. longum. An huc ducenda C. *farcta*, Br. in Salt. Abyss. mihi solo nomine cognita?

Tropical Africa, near Abu Gerad in the kingdom of Cordofan, *Kotschy !*

§ 13. *Macrostachyæ.* Herbæ rarius suffrutices. Stipulæ minutæ, sæpius obsoletæ. Racemi terminales v. demum oppositifolii, multiflori, floribus reflexis sæpius creberrimis. Calycis late campanulati laciniæ tubo breviores v. vix longiores. Carinæ rostrum sæpissime falcatum. Legumen oblongum v. cylindraceum, subfalcatum, sutura superiore sæpius impressa, extus sæpius pubescens v. hirsutum, intus nudum.—Species omnes mihi notæ hic enumeratæ.

The closely pendulous flowers and pods, the corolla more striped than usual, and the keel usually curved give a peculiar habit to this group, and readily distinguish it from the adjoining ones.

110 ? C. *lathyroides* (Guill. et Perrott. Fl. Seneg. 1, p. 163). Species mihi ignota.

Tropical Africa. Marshes near Albreda, *Leprieur* and *Perrottet*.

111. C. *pycnostachya* (sp. n.), diffusa, ramulis angulato-striatis minute puberulis glabrisve, stipulis setaceis, foliolis cuneato-oblongis obtusis emarginatisve supra v. utrinque glabris, racemis demum oppositifoliis, floribus parvis numerosis, carinæ rostro brevi falcato, ovulis circa 10, legumine subsessili oblongo minute puberulo.—Racemi 20-50-flori, fructiferi 2-3-pollicares, rarius longiores. Legumen 4-6 lin. longum.

Tropical Africa. In the kingdom of Sennaar, *Kotschy!* n. 417 in my set, but I have also an *Ammania* with the same number.

112. C. *zanzibarica* (sp. n.), erecta ? stipulis subnullis, foliolis cuneato-oblongis sublanceolatisve obtusis subtus ramulisque minute puberulis tomentosisve, racemis terminalibus laxiuscule multifloris, calycis latissimi valde obliqui dentibus tubo subtriplo brevioribus, carinæ rostro longo, ovario tomentoso-villoso.—Rami striati, rigiduli. Folia suprema subtus subfloccoso-tomentosa, adultiora subtus pube minuta conspersa. Racemi 3-4-pollicares. Flores quam in C. *striata* minores, penduli, striati.

Island of Zanzibar, on the east coast of Africa, *Bojer!*

113. C. *emarginata* (Boj.! MS.), erecta ? stipulis subnullis, foliolis obovato-v. cuneato-oblongis emarginatis utrinque cauleque villosis, racemo elongato terminali, floribus crebris, calycis villosi late campanulati laciniis tubo subæquilongis, ovario villoso multiovulato.—Racemus 3-4-pollicaris. Flores penduli, mediocres, striati. Carina intense colorata, incurvo-rostrata.

Island of Pemba, on the east coast of Africa, *Bojer!*

114. C. *vasculosa* (Wall.! Cat. n. 5427) ramis elongatis virgatis dense hirsutis, stipulis setaceis, foliolis oblongo-ellipticis sublanceolatisve petiolo communi pluries longioribus utrinque dense villosis, racemo terminali elongato, floribus

parvis numerosissimis, calycis membranacei hirti laciniis tubo vix longioribus, ovario sessili hirsuto multiovulato.—Ramus adest sesquipedalis, simplex. Racemus adhuc vix florens jam 3-4-pollicaris. Carinæ rostrum falcatum vexillo paullo longior.

Mauritius, *Telfair !*

115. C. *lanceolata,* (E. Mey.! Comm. p. 24), erecta, ramulis striatis glabris v. apice pubescentibus, stipulis subnullis, foliolis elongato-lanceolatis glabris v. subtus adpresso-puberulis, racemis terminalibus elongatis multifloris, calycis laciniis tubo subdimidio brevioribus, legumine sessili elongato adpresse pubescente.—Flores magnitudine *Loti corniculati.* Carinæ rostrum breve, incurvum. Legumen ultrapollicare.

South east Africa. Cafferland between the Omsamculo and the Omcomas *Drège !* Port Natal, *Peddie ! Krauss !* n. 469. Raised also in the late Mr. Barclay's garden from Mauritius seeds.

116. C. *brevidens,* (sp. n.), herbacea, erecta, stipulis minutis uncinatis obsoletisve, foliolis elongato-lanceolatis supra glabris subtus ramisque junioribus adpresse puberulis, racemo longiusculo plurifloro, floribus amplis dissitis, calycis glabri dentibus tubo triplo brevioribus, carinæ rostro vix falcato, legumine sessili elongato polyspermo.—Habitus C. *lanceolatæ* sed floribus paucioribus maximis distinctissima. Vexillum 7-8 lin. longum, striatum. Carinæ rostrum fere rectum, tamen forma *Macrotachyis* quam *Longirostribus* similior.

Tropical Africa. Kingdom of Fazokal *Kotschy,* n. 424.

C. *pallida* (Ait. DC. Prodr. 2, p. 134), may be one of the two last species, but the character given is insufficient to determine it.

117. C. *falcata* (Vahl. DC. Prodr. 2, p. 132), suffruticosa, divaricato-ramosa, stipulis subnullis, foliolis obovatis mucronulatis obtusisve glabris v. subtus ramulisque adpresse pubescentibus, racemis plerisque oppositifoliis laxiusculis plurifloris, floribus parvis, calycis pubescentis laciniis vix tubo longioribus, legumine elongato subfalcato polyspermo tenui-

ter puberulo.—C. *striata* Schum? Beskr. Pl. Guin. p. 336, non DC.—C. *striatæ* affinis. Flores minores, racemi multo breviores, et habitus rigidior.

Tropical Africa. Guinea (*Herb. Puer.* ex DC.) Bassa Cove *Ansell!* Cape Palmar *Vogel!*

118. C. *striata* (DC. Prodr. 2, p. 131), herbacea v. suffruticosa, erecta, divaricato-ramosa, stipulis subnullis, foliolis elliptico-oblongis obovalibusve glabris v. subtus ramulisque pube tenui subcanescentibus, racemis elongatis multifloris, floribus crebris mediocribus, calycis canescentis laciniis vix tubo longioribus, carina falcata alis duplo longiore, legumine elongato apice subfalcato polyspermo tenuiter puberulo. Bot. Mag. t. 3200.—C. *pisiformis* Guill. et Perrott? Fl. Seneg. p. 162. C. *Brownei* Reichb. Iconogr. Exot. 3. p. 12, t. 232, an DC. C. *latifolia* Hort. Calc! et Maurit! (non C. *lotifolia* Linn.)

Tropical and subtropical regions in both hemispheres but in some stations probably not indigenous. Marshes of Cape Verd *Leprieur and Perrottet?* Kingdom of Fazokal *Kotschy!* Mauritius *Telfair!* Madagascar *Lyall!* Singapore *Cuming!* n. 2401, Rio Janeiro *Pohl! Schücht! Guillemin! Martius!* Herb. Fl. Bras, n. 542, West Indies, *Herb. Hooker!*

Dr. Arnott in the Ann. Sc. Nat. Par. 2d Ser. p. 248, describes under the name of C. *Hookeri*, a species from the isle of St. Vincents, which he considers as allied to C. *Brownei*, and it is probable that, with Reichenbach, he refers the species last described to C. *Brownei*, but De Candolle's character "foliolis utrinque attenuatis" though it may sometimes be observed in a few of the upper leaves is not at all the usual state of the C. *striata*. Should it however, be really the same, the name *striata*, of the same date as the other, is very characteristic and preferable for adoption. If Dr. Arnott's C. *Hookeri* be a good species, and if the C. *Hookeriana* Alph. DC. mentioned above, p. 479, be also distinct from C. *ovalis*, the name of the latter one must be changed.

119. C. *bracteata* (Roxb.! DC. Prodr.? 2, p. 130), erecta, ramulis pubescentibus, stipulis subnullis, foliolibus ovalibus

utrinque acutis supra glabris subtus minute pubescentibus, racemis multifloris, floribus crebris, calycis puberuli laciniis latis vix tubo longioribus, legumine sessile oblongo subfalcato rufo-hirsutissimo.—Habitu *Priotropidi cytisoidi* simillima. Flores fere C. *striatæ*. Legumina C. *incanæ* sed uti in cæteris *Macrostachyis* pendula.

South Asia. Chittagong *Roxburgh!* Bhootan *Griffiths!* n. 5, Taong Dong in Burma, and Rangoon, *Wallich!* Cat. n. 5423, Philippine Islands *Cuming!* n. 1009, also St. Vincents *Guilding!* but probably from the Botanical Garden.

120. C. *clavata* (W. et Arn. Prodr. 1, p. 194).—Species mihi ignota.

East Indian Peninsula. Cunnawaddy near Dindygul, *Wight.*

121.? C. *Javanica* (Junghun—Walp. Repert. 1, p. 589).—Species mihi ignota. Affinis ex cl. Junghun C. *medicagineæ* Lam., sed descriptio tota abhorret.

Java. Common in grassy and sandy situations all over the island, *Junghun.*

§. 14. *Incanæ.* Herbæ suffruticesve divaricato-ramosa. Stipulæ minutæ v. nullæ. Racemi oppositifolii laxe multiflori. Calycis sæpius profunde fissi laciniæ lanceolatæ. Carinæ rostrum breve v. arcuatum. Legumen oblongum, pilis patentibus sæpius hispidum, rarius adpresse pubescens, patens v. pendulum, nec axi adpressum.

The species of this group, chiefly American, have the habit but not the keel of the *Longirostres*, the racemes are more lax than in the *Macrostachyæ*, the pods not so closely appressed to the peduncle, and the calyx deeply divided and often nearly as long as the corolla. Many species, especially the calyxes, are disposed to turn black in drying. From the *Fruticosæ*, they differ in their divaricate habit, and lax leaf-opposed racemes. Most of them are also annual, with remarkably hairy pods. If the group of *Polyphyllæ* be broken up, some of them might be added to the *Incanæ*.

122. C. *incana* (Linn.! DC. Prodr. 2, p. 132).—C. *affinis* DC.? Prodr. 2, p. 132. C. *purpurascens* Lam.? Dict. 2,

p. 200. C. *herbacea* Schweig. in Schranck. Syll. Pl. Ratisb. 2. p. 77.

An American species, which I have here inserted because it is frequently sent in East Indian collections. *Wight and Arnott!* assert it is only cultivated there. *Edgeworth!* found it apparently wild, at Futteighur in Doab. *Leprieur and Perrottet!* gathered it in the Walo country in tropical Africa. It is common in the West Indies, in Mexico (*Andrieux!* n. 424 and 425, *Galeotti!* n. 3361 etc.), along the Pacific coast of South America (*Cuming!* n. 993. *Mathews!* n. 1007, &c.) and in Bresil (*Blanchet!* n. 146, *Gardner!* n. 3652 and 5985 &c.)

[Hooker and Arnott's C. *incana* β from Mexico is a distinct species allied to the above, and to the same group belong C. *vitellina* Bot. Reg. and several others, chiefly Brasilian.]

§. 15. *Stipulaceæ*, Herbæ v. frutices. Stipulæ foliaceæ falcatæ. Racemi terminales v. oppositifolii, sæpius breves v. pauciflori. Flores et legumen *Fruticosarum*. Species omnes hic enumeratæ.

An artificial, rather than a natural group comprising species differing from each other in habit, yet scarcely referable to any other groups, and connected together by the character derived from the stipules, which are always foliaceous, and ovate, obovate, or lanceolate, more or less falcate and sometimes petiolate. They are smaller in C. *Orixensis* than in the other species but, even there, ovate not subulate.

123. C. *orixensis* (Rottl.—W. et Arn.! Prodr. 1, p. 193), Wall.! Cat. n. 5426. Mart. Denkschr. Acad. Münch., 6, p. 157, t. H.

East India. Pasture grounds, borders of cultivated fields, &c., *Roxburgh.* Circars and Travancore *Wright!* Poonah *Sykes!*

124. C. *xanthoclada* (Boj! MSS.), herbacea, stipulis lanceolato-semisagittatis foliaceis petiolum æquantibus, foliolis linearibus glabris v. subtus ramulisque junioribus puberulis,

racemis elongatis laxe plurifloris, calycis laciniis lanceolatis tubo æquilongis, carinæ rostro leviter falcato, legumine longiuscule stipitato glabro.—Caules bipedales demum glaberrimi, paucifoliati. Foliola 6-8 lin. longa. Racemi semipedales, 10-12 flori. Flores magnitudine *Loti corniculati*, pedicellis 2-3 lin. longis.

Madagascar, *Lyall !*

125. C. *podocarpa* (DC. Prodr. 2, p. 133), erecta, herbacea, divaricato-ramosa, stipulis foliaceis dimidiato-ovatis acutis subfalcatis, foliolis obovatis oblongisve subtus cauleque longe et laxe pilosis, racemis oppositifoliis 2-6 floris, floribus majusculis distantibus, legumine oblongo polyspermo glaberrimo, stipite tubo calycis longiore.

Tropical Africa. Plains of the Walo, country about Richard-Tol, and beyond the river on the borders of the Sahara desert *Leprieur and Perrottet,* kingdom of Sennaar *Kotschy !* n. 116 and at the foot of the Arrasch-Cool mountains in Cordofan *Kotschy !* Herb. Un. Itin. Pl. Nub. n. 93.

126. C. *Goreensis* (Guillem. et Perrott ! Fl. Seneg. 1, p. 165), herbacea, ramosissima, diffusa, stipulis foliaceis falcatis, foliolis obovato-v. cuneato-oblongis obtusis emarginatisve subtus ramulisque adpresse pubescentibus tomentosisve, racemis laxe 6-10-floris terminalibus oppositifoliisque, legumine sessile polyspermo breviter oblongo inflato pubescente.—C. *falcata,* Schum. Beskr. Pl. Guin. p. 335, non Vahl.

Tropical Africa. Island of Gorea, Cape Verd, and on the Gambia, *Leprieur and Perrottet ! Boteler !* Cape St. Marie and Galam *Heudelot !* common at Accra Adampi, &c., *Thonning,* Accra *Vogel !* n. 30, in the kingdom of Fazokal *Kotschy !* n. 436.

127. C. *cylindrocarpa* (DC. Guillem. et Perrott. Fl. Seneg. 1, p. 164).—Species mihi incognita.

Tropical Africa. Walo country near Kouma, Richard-Tol and on the river Marigot de Paoué, *Leprieur and Perrottet.*

128. C. *capensis* (Jacq.! Hort. Vind. t. 64), fruticosa, stipulis hinc inde petiolulatis obovatis foliaceis cæteris parvis obsoletisve, foliolis obovatis glabris v. subtus rarius utrinque ramulisque cano-pubescentibus, racemis laxis, floribus magnis longiuscule pedicellatis, calycis laciniis tubo longioribus, legumine longiuscule stipitato juniore adpresso-puberulo.—C. *arborescens* Lam.—DC. Prod. 2, p. 130. C. *incanescens* Linn. fil.

South Africa. Eastern districts of the Cape Colony. Uitenhage *Ecklon and Zeyher!* in Cafferland between Gekau and the Basche, *Drège!* Port Natal *Krauss!* n. 122, it is also *Burchell's!* n. 4104.

129. C. *Natalitia* (Meissn.! supra p. 66), fruticosa, stipulis lanceolatis foliaceis, foliolis cuneato-oblongis emarginatis submucronatis, racemis terminalibus laxis paucifloris, calycis dentibus tubum latum æquantibus, carina supra villosa, legumine breviter stipitato glabro.

South Africa near Port Natal *Krauss!* n. 339 according to Meissner, n. 539 in my herbarium, probably some clerical error in the one case or the other.

§. 16. *Purpureæ*. Frutices. Stipulæ subnullæ. Racemi terminales, pluriflori, breves v. parum elongati. Calyx breviter dentatus. Carina breviter et obtuse subrostrata.

Two very remarkable species differing in many respects from each other, and scarcely belonging to the genus, although the C. *purpurea* which is the most distinct, has so much the general appearance of the *Fruticosæ*.

130? C. *purpurea* (Vent. DC. Prodr. 2, p. 133), fruticosa, foliolis ellipticis obovatisve utrinque glabris v. subtus ramulisque aureo-tomentellis, racemis laxiusculis, calycis dentibus tubo brevioribus supremis truncatis, carina breviter et obtuse subrostratæ, legumine oblongo-inflatotransverse venoso glabro, stipite calyce vix duplo longiore.—C. *coluteoides* Lam. Dict. 2, p. 200.—An genus proprium?

South Africa, eastern districts of the Cape Colony. Rocks near Gnadenthal and woods near George *Drège!* Zwarteberg near Caledon, mountains of Groot Vadersbosch

in Swellendam, and Vanstaaden's river hills in Uitenhage *Ecklon and Zeyher!* also *Burchell!* n. 4685 and 5792.

131? C. *aspalathoides* (Lam. Dict. 2. p. 202), fruticosa, rigide ramosissima, stipulis subnullis, foliolis parvis cuneato-oblongis utrinque glabris v. suptus ramulisque sericeo-canescentibus, racemis laxiusculis plurifloris, calyce breviter 5-dentato, carina......, legumine breviter stipitato oblongo-inflato coriaceo glabro subavenio.—Species parva, ab omnibus habitu distincta et *Lebeckiis* sessilifoliis affinis. Corollas non vidi.

South Africa. Onder Bokkeweld, on the Grasberg River, *Drège!*

§ 17. *Fruticosæ.* Frutices, rarius suffrutices. Stipulæ obsoletæ. Racemi laxe pluri-sæpius multiflori, breves v. parum elongati. Calycis profunde fissi laciniæ lanceolatæ, laterales inter se sæpe diu cohærentes. Carina sæpius falcata, marginibus lanata. Legumen stipitatum v. rarius sessile, oblongo-cylindraceum, ultra-pollicare, adpresse pubescens v. rarius glabrum v. villosum. Species pleræque plus minus adpresse pubescentes, floribus majusculis.

* *Cytisoides*, legumine minore hirsutissimo. (Species Mascarenses).

132. C. *diosmæfolia* (sp. n.), suffruticosa, dichotoma, tota fulvo-tomentosa, foliolis in caule sessilibus confertis linearibus subcuneatisve acutis utrinque fulvo-sericeis, racemis paucifloris terminalibus, calycis laciniis lanceolatis tubo sublongioribus, legumine oblongo-ovoideo hirsutissimo.—C. *stenophylla*, Bojer! MS. non Vog. nec Eckl. et Zeyh.—Legumen 6-8 lin. longum.

Madagascar, *Bojer! Lyall!*

133. C. *cytisoides* (Hels. et Boj.! Hort. Maurit. non Roxb.), fruticosa, ramosissima, ramulis rufo-villosis, stipulis minutis subnullis, foliolis elliptico- v. cuneato-oblongis obtusis supra glabris subtus villosis, racemis paucifloris brevibus laxis, calycis profunde fissi laciniis lanceolatis corolla brevioribus,

ovario multiovulato, legumine oblongo hirsutissimo.—Habitus fere C. *uncinellæ*, ovario et legumine distinctissima.

** *Axillares*, Ramulis floriferis in axillis foliorum sæpius abbreviatis subaphyllis paucifloris.

134. C. *lotifolia* (Linn. D.C. Prodr. 2. p. 134).—C. *axillaris*, Ait? DC.? Prodr. 2. p. 135. Species nonnisi e speciminibus imperfectis mihi nota, e quibus distinctio nulla patet inter Africanis et Jamaicensibus.

Tropical Africa. Cape Coast, *Vogel!* n. 91; and West Indies, Jamaica, *Mac Fadyen!* Union Island, *Anderson!*

I am not aware of any other species with the same inflorescence, and in the case of this one, it is doubtful whether the peculiar inflorescence is normal or accidental.

*** *Vulgares*, legumine adpresse pubescente v. glabro.

135. C. *macrocarpa* (E. Mey.! Comm, p. 24), fruticosa, stipulis minutis, foliolis obovatis supra glabris subtus ramulisque minute puberulis, racemis laxiuscule plurifloris, calycis laciniis lanceolatis tubo subtriplo longioribus, legumine magno oblongo obscure transverse venoso minute puberulo, stipite calyce parum longiore.

South Africa. Marshy places between the Omcomas and the Omblas (or Omlaas), in Cafferland, *Drège!*

[The remaining species of this group are all American, and apparently numerous in Brazil. Amongst them may be mentioned, C. *anagyroides*, Humb. et Kunth., C. *cajanifolia*, Humb. et Kunth., C. *Dombeyana*, DC.? C. *pubera*, Vahl., C. *unifoliolata*, Benth., C. *leptophylla*, Benth., and many as yet unpublished.]

§ 18. *Polyphyllæ*. Herbæ elatæ v. sæpius frutices, habitu inflorescentia et floribus. *Fruticosarum* v. *Incanarum*, diversa tamen foliis plerisque v. omnibus 5-7-foliolatis. — Species omnes hic enumeratæ.

This is an artificial group, which ought, perhaps, to be broken up, and the species referred, some to the *Fruticosæ*, and some to the *Incanæ*.

136. C. *quinquefolia* (Linn.! W. et Arn.! Prodr. 1. p. 194). Wall.! Cat. n. 5429. L. *heterophylla*, Linn. fil.!

East Indian Peninsula, *Wight!* and others, Burmese territory, *Wallich.!* Tavoy, *Gomez!* Philippine Islands, *Chamisso! Cuming!* n. 647.

137. C. *Grahamiana* (W. et Arn.! Prodr. 1, p. 194).—C. *digitata*, Wall.! Cat. n. 5430, non Hook.

East Indian Peninsula. Dindygul Hills, *Wight!*

138. C. *digitata* (Hook.! W. et Arn.! Prodr. 1, p. 194).

East Indian Peninsula. Madura Hills, *Wight!*

139. C. *trichotoma* (Bojer, Hort. Maurit. p. 88), Decaisne, Ann. Sc. Nat. Par. 2. Sér. 4, p. 264. Species mihi ignota.

Madagascar, *Bojer*.

140. C. *Burkeana* (sp. n.), herbacea v. suffruticosa, erecta, caule petiolis racemisque pilis longis patentibus hirsutissimis, stipulis lineari-subulatis, foliolis 3-5 lineari-lanceolatis acutis supra glabris subtus pilosis, racemis laxis, bracteolis lanceolatis, calycis profunde fissi laciniis lanceolatis corollam subæquantibus, legumine subsessili oblongo subfalcato hirsutissimo.—Species distinctissima. Caules pedales. Pili ramorum et leguminorum longissimi, fulvi. Affinis videtur C. *incanæ* sed foliola sæpe quina. Flores majusculi. Legumen sesqui-pollicare.

South Africa. Macalisberg and Aapges River, in the interior to the N. E. of the colony, *Burke!*

Amongst the remaining foliolate species published C. *lunaris*, Linn., is the *Argyrolobium lanceolatum*. C. *argentea* and *angustifolia*, Jacq., C. *villosa* and *volubilis*, Thunb. and C., *decumbens*, Pers., are probably species of *Argyrolobium* or *Lotononis*. C. *styracifolia*, Horn., may be, as De Candolle suspects, a *Podalyria*. C. *macrostyla*, Don, is one of Wallich's *Oxyramphis*. C. *cytisoides*, Roxb., is *Priotropis cytisoides*. C. *turgida*, Herb. Amat., C. *micans* and *curtata*, Link., C. *mucronata*, Desv., C. *triantha*, Fl. Mex., and C. *striata* and *Brasila*, Schrank, are very doubtful species.

XVI. PRIOTROPIS, *W. et Arn.*

This genus consists of but one species, so very much like some of the fruticose *Crotalariæ* in every thing but the pod, that it cannot be considered as naturally removed from that genus, in which, however, it cannot be retained without doing violence to any satisfactory generic character which has yet been given to it.

1. P. *cytisoides* (W. et Arn.! Prodr. 1, p. 180 in adnot.)—*Crotalaria cytisoides*, Roxb.! Pl. Ind. 3, p. 276, DC. Prodr. 2, p. 1831. Wall.! Cat. n. 5422.—Habitus folia et flores fere *Crotalariæ anagyroidis*. Legumen stipiti 2-3-lineari insidens, oblongum, plano-compressum, 1-1½ poll. longum, circa 5 lin. latum apice oblique acutum, extus adpresse puberulum, intus nudum, valvulis membranaceo-chartaceis tranverse reticulato-venosis. Semina *Crotalariæ*.

East India. Nipal, *Wallich!* Sillet, *De Silva!* Taong Dong, in Burm, *Wallich!* Tenasserim, *Helfer!*

XVII. LOTONONIS, *DC.* (*Sect. Oxonidis.*)—*Leobordea, Delile.*—*Leptis, Lotononis, Krebsia et Polylobium, Eckl. et Zeyh.*—*Crotalariæ sp., Aulacinthus, Telina, Lipozygis et Capnitis, E. Mey.*

The above genera appear to me to have been distinguished upon very insufficient grounds. Those established by Ecklon and Zeyher, indeed, are to me wholly unintelligible, so many of the species referred in the Enumeratio to one genus having the generic character of some other one. E. Meyer's are much more consistent and natural, but the large vexillum of *Telina*, and the small lower lobe of the calyx in *Capnitis*, are but characters of degree, which are not, in either case, very definite, and even the rostrate keel of those species which he retains in *Crotalaria* against his own conviction, (see Comment. p. 155), passes gradually through several intermediate forms into the ordinary blunt keel of *Lotononis*. The introflexed carinal suture of the pod in *Aulacinthus* is exceedingly slight, and only to be seen in the ripe state, and appears to me to be of no importance. Indeed, although I have cut across several pods, apparently fully formed, of E. Meyer's A. *gracilis*, I have only once seen a slight inflexion inside, though, in general, the carinal suture is slightly depressed *outside*. *Leobordea* of Delile, belongs in every respect to the same section as *Capnitis*, E. Mey., but the northern species added to it by Boissier, Fenzl and Ledebour, have a much more prominent lower tooth to the calyx, and belong to the section *Leptis*.

Whilst writing out these observations for the press, I have received the April number of the Annales des Sciences Naturelles, in which is a paper on the northern species, by Spach, where that writer places them in *Leobordea*, and suggests the junction, under that name, of some of the above-named Cape genera. This name of *Leobordea* is, it is true, the first that has been published as a substantive genus, but in a confined sense, without any reference to the South African species, which De Candolle had long previously proposed as a distinct section, under the name of *Lotononis*, expressing at the same time his opinion that it would thereafter be necessary to consider this section as a distinct genus. As, moreover, De Candolle's *Lotononis* would include all the species I now propose to refer to it, which Delile's *Leobordea* would not, it may surely be considered that the priority of the former has been sufficiently established for its adoption as the generic name, especially as, having been taken up by Ecklon and Zeyher, it is already applied to a much greater number of species than *Leobordea*. Spach does not compare Delile's genus with De Candolle's *Lotononis*.

As a whole, the genus, as now proposed, comes very near to *Crotalaria* on the one hand, and to *Argyrolobium* on the other, accompanied frequently by much of the habit, though none of the character, of *Lotus*. From *Crotalaria*, it is generally known by the form of the calyx, the blunt keel, and the pod more or less compressed when young. There are some species, however, where the calyx is not distinguishable from that of *Crotalaria*, but this is not a material character; in a few others, the keel is acute, or even rostrate in one or two, but in these, the very much compressed pod, and the very different habit, leave no doubt as to their affinity with the *Lotononid es*, and although the keel is rostrate, the style is incurved, and not geniculate, as in *Crotalaria*. The character derived from the pod is less constant; a slight compression may be observed in *Crotalaria ramosissima*, and in a few of the *Chrysocalyciniæ*, whilst in many *Lotononides*, it is decidedly turgid when ripe, but in these cases, the form of the keel is very decided.

From *Argyrolobium*, *Lotononis* may be constantly known by the calyx.

The peculiarities which have induced the approximation of *Lotononis* to *Lotus*, are the tendency to an umbellate inflorescence, and the unilateral solitary stipules which may be observed in several of the species, and are not to be found in *Crotalaria*, but these characters are not of importance, nor are they constant in species otherwise closely allied to each other.

The following divisions, which I should propose as sections, have mostly been established as genera, though not always with the same limits as here given to them.

Sect. 1. AULACINTHUS. Racemi terminales. Flores parvi. Legumen breve, turgidum, sutura carinali subintrusa.

Sect. 2. KREBSIA. Flores in pedunculis brevibus solitarii v. pauci in racemis terminalibus. Vexillum amplum. Carina obtusa. Legumen compressum v. vix turgidum.

Sect. 3. TELINA. Pedunculi elongati uniflori v. rarius subumbellatim 2-4-flori. Vexillum amplum. Carina obtusa.

Sect. 4. POLYLOBIUM. Pedunculi elongati umbellatim v. subracemoso-pluriflori. Vexillum mediocre. Carina obtusa.

Sect. 5. OXYDIUM. Pedunculi umbellatim multiflori rarius 1-2-flori. Vexillum mediocre. Carina acuta.

Sect. 6. LIPOZYGIS. Florum capitula subsessilia terminalia. Vexillum sæpius oblongum. Carina obtusa v. rarius acutiuscula.

Sect. 7. LEOBORDEA. Flores parvi, subsessiles, oppositifolii v. in dichotomiis caulis pauci. Calycis lacinia infima minima. Carina obtusa.

Sect. 8. LEPTIS. Flores parvi, subsessiles, oppositifolii, solitarii v. pauci. Carina elongata, obtusa v. rarius acuta.

Sect. 1. AULACINTHUS. Fruticuli humiles ramosissimi. Stipulæ nullæ v. rarius solitariæ. Flores parvi, in racemis terminalibus laxis pedicellati. Vexillum obovatum. Carina obtusa. Legumen breve, turgidum, sutura carinali demum præsertim prope basin leviter intrusa.—*Aulacinthus,* E. Mey. Comm. p. 156.—Species omnes Capenses.

The plants of this section have nearly the habit of some *Viborgiæ* and *Lebeckiæ,* but the calyx and fruit are entirely those of *Lotononis.*

1. L. *gracilis,* fruticulosa, ramosissima, sericeo-canescens, ramulis gracilibus suberectis, stipulis nullis, foliolis in petiolo longo linearibus, racemis laxe 4-6-floris, calyce sericeo, legumine appresse puberulo calyce vix duplo longiore.—*Aulacinthus rigidus,* E. Mey ! Comm. p. 156.

Rocky places on the Roodeberg and Ezelkop Mountains among the Camiesbergen, *Drège !*

2. L. *rigida,* fruticulosa, rigide ramosissima, subspinescens, incano-sericea, stipulis minutis v. nullis, foliolis in petiolo brevi linearibus, racemis brevibus, calyce piloso-hirto, legumine piloso pubescente calyce plus duplo longiore.—*Aulacinthus rigidus,* E. Mey. ! Comm. p. 157.

In the Zwarteland, and at Mordkuil, *Drège !*

3. L. *viborgioides* (sp. n.), fruticulosa, decumbens, laxe ramosissima, tenuissime adpresse puberula v. glabra, ramulis tenuibus huic inde sub-spinescentibus, stipulis solitariis lanceolatis, foliolis oblongo-cuneatis, racemis laxe 4-6-floris, calyce glabriusculo, ovario glabro.—Habitus fere *Viborgiæ tetrapteræ.* Stipulæ nunc minutæ, nunc petiolum subæquantes. Flores L. *gracilis,* sed minores. Calyx tubulosus, laciniis superioribus lanceolatis per paria fere ad

medium connatis, infima setacea breviore. Legumen non vidi. Ovarium sessile, glabrum, omnino *Lotononidis.*

Cape Colony, but without any precise locality, *Bowie! Thom.!* (*Herb. Hooker.*)

Sect. 2. KREBSIA. Frutices sæpe humiles, ramosissimi. Foliola parva. Stipulæ foliolis subsimiles v. minores geminæ. Flores majusculi, pedicellati, pauci ad apices ramorum primarium racemosi, plerique tamen in pedunculis brevibus terminalibus (caule excrescente mox oppositifoliis, vel ramulo brevissimo subaphyllo axillaribus) solitarii, pedicello in pedunculum articulato. Vexillum amplum. Carina obtusa. Legumen compressum, demum subturgidum.—*Krebsia,* Eckl. et Zeyh. *Telinæ,* sect 1 et 2, E. Mey.—Species omnes Capenses.

4. L. *cytisoides,* fruticosa, ramis virgatis subsericeo-hirtis, foliolis cuneato-oblongis obovatisve acutis obtusisque utrinque sericeis villosisve, pedunculis unifloris brevibus axillaribus terminalibusve, vexillo amplo sericeo v. glabriusculo, legumine hirsuto.—*Telina cytisoides,* E. Mey.! Comm. p. 80, et T. *eriocarpa,* E. Mey.! l. c. *Krebsia cytisoides,* et K. *eriocarpa,* Steud. Nom. Bot. ed. 2. *Krebsia striata,* Eckl. et Zeyh! Enum. p. 179.

Rocky mountains of Uitenhage district, *Ecklon and Zeyher! Drège!* and thence to the Omcomas and the Omsamcaba, *Drège!* also n. 856 of *Zeyher's* Uitenhage collection, n. 2770 and 4140 of *Burchell,* and in *Bowie's* collection.

5. L. *genuflexa,* pube tenuissima canescens, ramis tenuibus subvirgatis, foliolis cuneato-linearibus v. anguste oblongis, stipulis anguste oblongis, pedunculis unifloris oppositifoliis folio longioribus v. 2-3 in racemo terminali, calycis laciniis longe acuminatis, legumine tenuissime appresso-sericeo.—*Telina genuflexa,* E. Mey.! Comm. p. 69. *Krebsia genuflexa,* Steud. Nom. Bot. ed. 2.

Grassy places between Kliplaat and Key rivers, in Cafferland, and dry hills, near Gaatje, *Drège!*

6. L. *carnosa,* minute puberula, ramis tenuibus virgatis,

foliolis stipulisque linearibus carnosulis glabris v. minute puberulis, racemo terminale laxe plurifloro pedunculisque oppositifoliis brevibus unifloris, calycis laciniis tubo brevioribus, legumine glabriusculo.—*Krebsia carnosa,* Eckl. et Zeyh. Enum. p. 180. *Telina striata,* E. Mey.! Comm. p. 68. *Krebsia striata,* Steud. Nom. Bot. ed. 2.

Cafferland, on the sides of hills, near Silo, on the Kliplaat River, *Ecklon and Zeyher,* between the Omtata and the Omsamwubo, *Drège !*

7. L. *divaricata,* fruticulosa, divaricato-ramosissima, subspinescens, tenuissime cano-puberula, stipulis petiolo multo brevioribus, foliolis cuneato-oblongis glabriusculis, calycis laciniis longe acuminatis, pedunculis brevibus unifloris, legumine adpresse pubescente v. glabriusculo.—*Krebsia divaricata,* Eckl. et Zeyh.! Enum. p. 179.

Cafferland, on the sides of hills, near Silo, on the Kliplaat River, *Ecklon and Zeyher !* on the Zuurebergen, *Burke !*

8. L. *sericophylla* (sp. n.), humilis, ramosissima, undique albo-sericea, foliolis parvis linearibus cuneatisve, stipulis parvis, pedunculis abbreviatis, vexillo legumineque dense sericeis.—L. *divaricatæ* similis, ramuli tenuiores, foliola angustiora et indumento distincta.

Wolve Kloof, *Burke !*

Sect. 3. TELINA. Suffrutices, caulibus numerosis herbaceis diffusis. Stipulæ solitariæ v. geminæ, foliolis subsimiles v. sæpius minores. Flores majusculi, in pedunculo mox oppositifolio sæpius elongato solitarii v. pauci, subsessiles v. breviter pedicellati. Vexillum amplum. Carina obtusa. Legumen demum teres v. turgidum, interdum fere *Crotalariæ.* Flores sæpius cærulescentes.—*Lotononis,* Eckl. et Zeyh. *Telina,* sect. 3, E. Mey.—Species omnes Capenses.

Some of the plants of this section come very near to some of the *Crotalariæ Oliganthæ,* with which Ecklon and Zeyher appear to have confounded them, as they have a *Crotalaria azurea* with a blunt keel, and a *Lotononis effusa* with a long rostrate one, the pod being nearly the same in both species ;

the real distinction is, however, in this instance accurately drawn by E. Meyer.

9. *L. bracteata* (sp. n.), decumbens, subsericeo-pubescens, stipulis geminis parvis linearibus acutis, foliolis linearibus suboblongisve plerisque acutis petiolo longioribus, pedunculis folio subbrevioribus, bracteis bracteolisque orbiculatis truncatis appressis, legumine compresso demum subtereti sericeo.—Pallide virescens. Bracteæ et bracteolæ 1½ lin. longæ, deciduæ. Calyx 4 lin. longus, subinflatus, laciniis supremis arcuatis cum lateralibus lanceolatis alte connatis, infima subulata profunde soluta. Legumen fere pollicare.

Mooze River, *Burke !*

10. L. *azurea*, diffusa, glabra v. pilosiuscula, stipulis geminis oblique ovato-lanceolatis petiolo brevioribus, foliolis cuneato-oblongis glabriusculis crassiusculis, pedunculis oppositifoliis folio longioribus unifloris, bracteis setaceis, legumine turgido piloso.—*Crotalaria azurea*, Eckl. et Zeyh.! Enum. p. 174. *Telina heterophylla*, E. Mey.! Comm. p. 69, excl. syn. Thunb.

Uitenhage, on sandy hills near Krakakamma and Port Elizabeth, *Ecklon and Zeyher !* (*Zeyher*, n. 922), between Eschenbosch and the Gamtoos River, *Drège !* also *Burchell !* n. 4528.

11. L. *prostrata*, diffusa, ramulis sericeo-pubescentibus, stipulis ovatis lanceolatisve sæpius solitariis petiolo multo brevioribus, foliolis obovatis supra glabris subtus adpresse pubescentibus, pedunculis oppositifoliis elongatis unifloris v. rarius 2-3-floris, bracteis parvis subulatis, vexillo dorso ad nervum medium pubescente, legumine turgidulo sericeo.—*Ononis prostrata*, Linn.! *Crotalaria vexillata*, E. Mey.! Linnæa 7, p. 153. *Lotononis vexillata*, Eckl. et Zeyh.! Enum. p. 176. *Telina prostrata*, E. Mey.! Comm. p. 69.

Mountains near Cape Town, *Ecklon and Zeyher ! Drège !* etc.

β ? glabrior (floribus a me non visis).—*Ononis excisa*, Thunb. Fl. Cap. p. 586 ? *Telina excisa*, E. Mey.! Comm.

p. 70. *Lotononis excisa*, Steud. Nom. Bot. ed. 2. *Crotalaria Thunbergiana*, Vogel ex Walp. Linnæa 13, p. 475.

Dutoitskloof Mountains, *Drège!*

12. L. *villosa* (Steud. Nom. Bot. ed. 2), diffusa, tota hirsuta, stipulis plerisque solitariis lanceolatis acutis, foliolis obovatis mucronatis utrinque hirsutis, pedunculis oppositifoliis elongatis subunifloris, bracteis setaceis, calyce vexillo undique villoso vix breviore, legumine hirsuto.—*Ononis villosa*, Thunb. Fl. Cap. p. 585? *Telina villosa*, E. Mey.! Comm. p. 70.

Mountainous thickets at Riebeck's Kasteel, in Stellenbosch district, *Drège!*

13. L. *acuminata* (Eckl. et Zeyh.! Enum. p. 176), diffusa, ramulis pubescentibus, stipulis sæpius solitariis ovatis oblongisve acutis, foliolis obovatis acute acuminatis rigidulis pilosiusculis v. subtus sericeis, pedunculis subterminalibus 1-2-floris, bracteis setaceis, calyce vexillo extus puberulo multo breviore, legumine turgidulo molliter pubescente.

Pastures near the Zwartkop River in Uitenhage, *Ecklon and Zeyher!* (n. 866 of *Zeyher*).

14. L. *argentea* (Eckl. et Zeyh. Enum. p. 176).—Unknown to me.

Carroid hills between Kochmanskloof and the Gauritz River, Kannaland, *Ecklon and Zeyher.*

15. L. *macrocarpa* (Eckl. et Zeyh. Enum. p. 176).—Unknown to me.

Sandy places near Brackfontein, in Clanwilliam, *Ecklon and Zeyher.*

16. L. *varia* (Steud. Nom. Bot. ed. 2), diffusa, glabra v. adpresse puberula, stipulis sæpius geminis ovatis petiolo brevioribus, foliolis obovatis cuneatisve, pedunculis oppositifoliis umbellatim v. subracemoso-plurifloris, vexillo amplo extus ad nervum pubescente.—*Telina varia*, E. Mey.! Comm. p. 70.

Draakenstein Hills, *Drège!* also in *Thom's* collection.

Sect. 4. POLYLOBIUM. Suffrutices, caulibus diffusis ramosissimis. Stipulæ geminæ v. rarius solitariæ foliolis subsimiles. Flores mediocres, in pedunculo mox oppositifolio sæpius elongato plurimi, umbellati v. breviter subracemosi. Vexillum obovatum, carinam obtusam parum superans. Legumen subcompressum v. turgidulum.—*Polylobii* sp. Eckl. et Zeyh. *Lipozygeos* sp. E. Mey.—Species omnes Capensis.

17. L. *umbellata,* diffusa, adpresse pubescens v. glabriuscula, stipulis sæpius solitariis petiolo multo brevioribus, foliolis obovatis, umbellis longiuscule pedunculatis laxiusculis plurifloris, bracteis minutis, floribus cernuis, legumine subfalcato compresso demum turgido.—*Ononis umbellata,* Linn ? *Lipozygis umbellata,* E. Mey.! Comm. p. 76. *Ononis ? anthylloides,* DC. Prodr. 2, p. 168. *Ononis glabra,* Thunb.? Fl. Cap. p. 588. *Crotalaria truncata,* E. Mey.! Linnæa 7, p. 151. *Polylobium truncatum,* Eckl. et Zeyh.! Enum. p. 181. *Polylobium filiforme,* Eckl. et Zeyh. Enum. p. 181 teste Walp.

Common on the mountains of Cape and Stellenbosch districts to the Zondereinde River, *Drège ! Ecklon and Zeyher ! Sieber !* (Fl. Cap. exs. n. 52) and others.

18. L. *involucrata,* diffusa, undique hirsuto-villosa, foliolis linearibus oblongis v. infimis cuneatis, stipulis geminis linearibus lanceolatisve, pedunculis terminalibus v. rarius oppositifoliis umbellatim v. subracemoso-multifloris, bracteis lanceolatis pedicello longioribus flores nunc æquantibus, calycis laciniis subulatis legumine turgido paullo brevioribus.—*Ononis involucrata,* Linn. fil. *Crotalaria involucrata,* E. Mey.! Linnæa 7, p. 152. *Polylobium involucratum,* Eckl. et Zeyh.! Enum. p. 182. *Lipozygis involucrata,* E. Mey.! Comm. p. 80. *Ononis asphaltoides,* DC. Prodr. 2, p. 167. *Polylobium tenuifolium,* Eckl. et Zeyh.! Enum. p. 182. P. *angustifolium,* Eckl. et Zeyh. l. c.

Common in sandy, stony, situations in Cape and Stellenbosch districts, from the Zwarteland to the Hottentots-Holland Mountains, and Klyn River, *Drège ! Ecklon and Zeyher !* and others.

19. L. *peduncularis,* diffusa, pilosa, stipulis geminis linearibus petiolum æquantibus, foliolis linearibus subcuneatisve,

pedunculis terminalibus elongatis umbellatim v. subracemoso-plurifloris, bracteis lanceolatis linearibusve pedicellum raro superantibus, calycis sericei laciniis lanceolatis breviter acuminatis, carina obtusissima, legumine compresso v. demum subtereti glabriusculo calyce plus duplo longiore.—*Lipozygis peduncularis*, E. Mey.! Comm. p. 79.

Sands about Paarl and Grœnekloof, in Stellenbosch district, *Drège!*

20. L. *secunda*, basi decumbens, ramis adscendento erectis pilosiusculis, stipulis lineari-lanceolatis petiolo sublongioribus, foliolis linearibus glabriusculis v. subtus pilosis, pedunculis terminalibus elongatis apice umbellatim plurifloris, bracteis vix pedicellos superantibus, calycis subsericei laciniis lanceolatis, carina arcuata obtusa, legumine hirsutissimo.—*Ononis secunda*, Thunb. Fl. Cap. p. 588. *Crotalaria fastigiata*, E. Mey. Linnæa 7, p. 152. *Polylobium fastigiatum*, Eckl. et Zeyh. Enum. p. 183. *P. Mundtianum*, Eckl. et Zeyh. l. c. *Telina angustifolia*, E. Mey.? Comm, p. 70 (ex diagnose). *Lotononis angustifolia*, Steud. Nom. Bot. ed. 2.

Cape flats, *Ecklon and Zeyher, Harvey!* Swellendam province, *Mundt.* Also in *Bowie's* collection; and if E. Meyer's synonym be correctly referred to this plant, it is found also in Albany, *Drège!*

Sect. 5. OXYDIUM. Suffrutices, caulibus procumbentibus sæpe filiformibus. Stipulæ solitariæ. Flores parvi, in pedunculo oppositifolio sæpius elongato numerosi v. rarius pauci, umbellati. Vexillum ovatum, carina acuta v. subrostrata sæpius brevius. Legumen turgidum, rarius compressum.—*Polylobii* sp. Eckl. et Zeyh.—*Crotalariæ* sp. E. Mey. Species omnes Capenses.

21. L. *trichopoda*, procumbens, glaucescens v. pube brevissima canescens, ramulis filiformibus, stipulis solitariis parvis ovatis orbiculatisve, foliolis obcordatis obovatis ellipticisve, pedunculis tenuibus elongatis multifloris, bracteis minutis, calyce sericeo, legumine lineare adpresse pubescente demum vix turgido calyce pluries longiore.—*Crotalaria trichopoda*, E. Mey.! Comm. p. 154. *Polylobium typicum*, Eckl. et

Zeyh. Enum. p. 180. P. *intermedium*, Eckl. et Zeyh.! Enum. p 181.

Uitenhage district, from the Van Staadens to the Sunday rivers, *Drège! Ecklon and Zeyher!* etc. (n. 401 of *Zeyher*).

22. L. *perplexa* (Eckl. et Zeyh.! Enum. p. 177) procumbens, glabra v. pube brevissima canescens, ramulis filiformibus, stipulis solitariis parvis oblique ovato-lanceolatis, foliolis cuneato-oblongis v. infimis obovatis supremis linearibus, pedunculis tenuibus elongatis 1-2-floris, bracteis minutis, calyce sericeo, legumine oblongo sericeo turgido calyce subduplo longiore.—*Crotalaria perplexa*, E. Mey.! Linnæa 7, p. 151.

Table, Lion, and Devil's Mountains, near Cape Town, *Ecklon and Zeyher! Harvey!*

23. L. *rostrata*, procumbens, pube tenui adpressa subcanescens, ramulis filiformibus, stipulis solitariis parvis oblongis lanceolatisve falcatis, foliolis cuneato-oblongis linearibusve v. infimis obovatis, pedunculis tenuibus elongatis umbellatim plurifloris, bracteis minutis, calyce sericeo, legumine ovoideo turgido calycem æquante v. paullo superante.—*Crotalaria micrantha*, E. Mey.! Comm. p. 28. C. *tenuiflora*, Steud. Nom. Bot. ed. 2.—Carina fere *Crotalariæ*, sed stylus, inflorescentia et stipulæ *Lotononidis*.

Shrubby hills in Roodesand, *Drège!*

24. L. *debilis*,—*Polylobium debile*, Eckl. et Zeyh. Enum. p. 141. From their description, it appears to be very near L. *rostrata*, I have not seen the plant.

Carroid Hills, near Hassaquaskloof, in Swellendam, *Ecklon and Zeyher.*

25. L. *acutiflora*, procumbens, pube tenui canescens v. demum glabrescens, ramulis filiformibus, stipulis solitariis parvis orbiculatis oblongisve, foliolis subquinis cuneato-oblongis linearibusve, pedunculis folio subbrevioribus laxe umbellatim plurifloris, bracteis pedicello elongato brevioribus, calycibus subsericeis, legumine sericeo oblongo falcato demum turgido calycem vix superante.—*Crotalaria quinata*, E. Mey.! Comm. p. 27.

Plains near Krakkeelskraal, in Clanwilliam district, *Drège!*

26. L. *oxyptera*, procumbens, subsericeo-pubescens v. villosa, stipulis solitariis oblique ovatis lanceolatisve, foliolis obovatis oblongisve, pedunculis folio subbrevioribus villosis subcapitato-plurifloris, bracteis pedicello brevissimo longioribus, calycibus villosis, legumine turgidulo calycem paullo superante (?).—*Crotalaria oxyptera*, E. Mey! Comm. p. 28. —Calyces quam in præcedentibus multo majores.

Klein Draakenstein Hills, *Drège!*

27. L. *pallens*.—*Polylobium pallens*, Eckl. et Zeyh. Enum. p. 182.—Unknown to me but apparently near L. *oxyptera*.

Sides of hills near Brackfontein in Clanwilliam district, *Ecklon* and *Zeyher*.

Sect. 6. LIPOZYGIS. Suffrutices, caulibus decumbentibus v. erectis brevibus. Stipulæ solitariæ. Flores parvi v. mediocres, in capitulis umbellisve sessilibus numerosi. Corolla marcescens; vexillum obovatum v. oblongum, carinam obtusam vix æquans v. rarius superans. Legumen compressum v. demum subturgidum.—*Lipozygeos*, sp. E. Mey.—Species omnes Austro-Africanæ.

28. L. *pentaphylla*, decumbens, ramosa, subsericeo-hirta, stipulis parvis lanceolatis, foliolis subquinis obovatis, capitulis densissimis sessilibus, bracteis setaceis, calycibus molliter hirsutissimis, vexillo oblongo obtuso carinaque oblonga incurva pilosis.—*Lipozygis pentaphylla*, E. Mey.! Comm. p. 79.

Karakuis, *Drège!*

29. L. *polycephala*, decumbens, ramosa, mollissime sericeo-villosa, stipulis oblongo-lanceolatis, foliolis ternis obovatis utrinque molliter incano-villosis, capitulis densissimis sessilibus, bracteis ovatis, calycibus hirsutissimis subinflatis, vexillo late obovato obtuse acuminato carinaque galeata extus sericeis.—*Lipozygis polycephala*, E. Mey.! Comm. p. 79.—Capitula ad apices ramulorum axillarium falcatarum sessilia, nec in axillis pedunculata.

Kamiesbergen, *Drège!*

30. L. *eriantha* (sp. n.) molliter et laxe piloso-hirta, caulibus brevibus adscendentibus erectisve subramosis, stipuli

foliolisque oblongo-ellipticis acutissimis utrinque pilosis, capitulis laxiusculis sessilibus, bracteis parvis setaceis, calyce hirsuto, vexillo oblongo acuminato carinaque obtusa arcuata dense sericeis, legumine compresso demum subturgido sericeo calyce vix duplo longiore.—Affinis L. *corymbosæ*. Foliola multo angustiora. Flores pauciores, duplo majores.

Macalisberg, to the north east of the colony, *Burke!*

31. L. *corymbosa*, piloso-hirta, caulibus brevibus adscendentibus subsimplicibus, stipulis foliolisque obovato-oblongis, capitulis laxiusculis sessilibus multifloris, bracteis setaceis, vexillo oblongo acuminato carinaque obtusa arcuata pubescentibus.—*Lipozygis corymbosa*, E. Mey.! Comm. p. 79.

Grassy hills near the Omtata, *Drège!* and on the summit of the Table Mountain near Port Natal, *Krauss!* n. 436.

32. L. *laneolata*, parce patentim pilosa, caulibus adscendentibus subramosis, stipulis foliolisque lineari-lanceolatis acutis, capitulis laxis corymbiformibus terminalibus subsessilibus multifloris, bracteis setaceis, vexillo oblongo longe acuminato carinaque subarcuata glabris v. lævissime pilosis.—*Aspalathus lanceolatus*, E. Mey.! Comm. p. 37.—Legumen in specimine immaturum quidem sed jam auctum, omnino *Lotononidis* et nequaquam *Aspalathi*.

On the Witbergen, grassy hills near Leewenspruit, *Drège!*

Sect. 7. LEOBORDEA. Herbæ pusillæ, caulibus decumbentibus sæpe dichotomis. Stipulæ solitariæ. Flores parvi, in fasciculis oppositifoliis paucifloris sessiles. Calycis lacinia infima minima. Vexillum oblongum, carina obtusa brevius. Legumen compressum v. demum turgidum.—*Leobordea*, Delile. *Capnitis*, E. Mey. *Leptis* sp. Eckl. et Zeyh.

33. L. *porrecta*, procumbens, subsericeo-pubescens, stipulis parvis, foliolis parvis cuneato-oblongis, floribus subgeminis, calycis tubulosi dentibus tubo brevioribus infima minima, petalis omnibus exsertis, legumine pubescente breviter exserto.—*Capnitis porrecta*, E. Mey.! Comm. p. 81. *Crotalaria prolifera*, E. Mey.! Linnæa 7, p. 152? *Leptis prolifera* et L. *debilis*, Eckl. et Zeyh. Enum. p. 175? *Leobordea porrecta*, Steud. Nom. Bot. ed. 2.

Near Zwartbulletje in the Koup, *Drège!* and if I am right

in the synonyms, in Uitenhage and Albany districts. *Ecklon* and *Zeyher.*

34. L. *clandestina,* procumbens, dichotoma, tomentoso-canescens, stipulis minimis, foliolis obovato-oblongis, floribus solitariis geminisve subsessilibus, calycis tubulosi tomentosi dentibus brevibus, infima minima, vexillo alisque inclusis, carina exserta arcuata tomentosa, legumine tomentoso vix calycem auctum superante.—*Capnitis clandestina,* E. Mey.! Comm. p. 81. *Leobordea clandestina,* Steud. Nom. Bot. ed. 2.

Plains of the Gariep between Verleptpraam and Natvoet, *Drège!*

35. L. *Leobordea,* procumbens, subdichotoma, subsericeo-canescens, stipulis oblongo-lanceolatis parvis, foliolis obovato-oblongis, floribus 2-5 subsessilibus, calycis tubuloso-campanulati laciniis vix tubo brevioribus, infima minuta, petalis brevissime exsertis, legumine oblongo demum turgido calycem breviter superante.—*Lotus platycarpos,* Viv. Fl. Æg. Decad. 4, p. 14. *Leobordea lotoides,* Delile! Fragm. Fl. Arab. p. 23, f. 1. *Leobordea persica,* Spach.! Ann. Sc. Nat. Par. 19, p. 235 et L. *sphærosperma,* Spach.! l. c.

Peninsula of Sinai, *Bové!* and others. Near Cairo in Egypt, *Schubert!* Sandy plains of Djeddah, *Schimper! S. Fischer!* n. 64. South Persia, *Aucher-Eloy!*

Sect. 8. LEPTIS. Herbæ v. suffrutices pusilla, caulibus decumbentibus v. erectis brevibus. Stipulæ solitariæ, rarius geminæ. Flores parvi, solitarii v. rarius 2-3 oppositifolii, sessiles v. breviter pedicellati. Calyx tubulosus, lacinia infima cæteris subæquilonga v. paullo breviore. Vexillum obovatum, carinam obtusam v. rarius acutam æquans v. subsuperans.—*Leptis* sp. Eckl. et Zeyh. *Lipozygeos* et *Crotalariæ* sp. E. Mey. *Leobordeæ* sp. Spach.

[Besides the species enumerated below, the following belong to this section: 1. L. *lupinifolia,* (*Leobordea,* Boiss.), South Spain. 2. L. *genistoides,* (*Leobordea,* Fenzl.), Taurus mountains. 3. L. *sericea,* (*Leobordea,* Ledeb.), S. Caucasian provinces of Russia, which last I have not seen. The *Leo-*

bordea argyroloboides of Spach from Asia, which also I have not seen, does not appear, from his character, to be distinct from L. *genistoides*.]

* *Foliolis quinis, carina obtusa.*

36. L. *quinata*, pusilla, prostrata, tenuissimè sericeo-canescens, stipulis parvis solitariis, foliolis minutis cuneato-oblongis, floribus solitariis geminisve oppositifoliis subsessilibus, calycis lacinia infima cæteris paullo minore, vexillo obovato-oblongo dorso medio sericeo carinam oblongam obtusam subæquante, legumine compresso demum vix turgido calyce duplo longiore adpresse puberulo.—*Lipozygis quinata*, E. Mey.! Comm. p. 77.

Camiesbergen, rocks near Modderfontein, *Drège !*

* * *Foliolis ternis, carina obtusa, legumine vix turgido sericeo.*

37. L. *brachyloba*, procumbens, subsericeo-canescens, ramulis tenuibus, stipulis solitariis linearibus parvis, foliolis cuneato-oblongis linearibusve v. inferioribus obovatis, floribus 2-5 subsessilibus oppositifoliis, bracteis minutis, calycis puberuli laciniis subæquilongis corolla dimidio brevioribus, vexillo obovato-oblongo acuminato dorso vix sericeo, carina subfornicata obtusa glabra, legumine calyce triplo longiore adpresse pilosulo demum vix tumido.—*Lipozygis brachyloba*, E. Mey.! Comm. p. 78. *Leptis brachyloba*, Steud. Nom. Bot. ed. 2.—Flores 3 lin. longi.

South Africa, *Burchell !* n. 1273. Karakuis, *Drège !*

38. L. *falcata*, humilis, procumbens, tenuissime subsericeo-canescens, stipulis solitariis parvis, foliolis cuneato-oblongis linearibusve, floribus solitariis geminisve oppositifoliis, calycis puberuli laciniis subæquilongis, petalis glabris calyce dimidio longioribus, vexillo oblongo acuto carinam oblongam subuncinatam vix æquante, legumine calyce pluries longiore falcato appresse puberulo demum vix tumido.—*Lipozygis falcata*, E. Mey.! Comm. p. 78. *Leptis falcata*, Steud. Nom. Bot. ed. 2.—Flores 2½ lin. longi.

On the Gariep near Verleptpraam, and sandy hills near Ebenezer, *Drège!*

39. L. *carinata*, glabriuscula v. minute puberula, ramis tenuibus ascendentibus elongatis, stipulis geminis linearibus inæqualibus v. rarius solitariis, foliolis cuneato-oblongis linearibusve, floribus oppositifoliis 1-3 nis subsessilibus, calyce tomentello, vexillo obovato-oblongo carinaque obtusa æquilonga extus sericeo-villosis.—*Lipozygis carinata*, E. Mey.! Comm. p. 80.

Caffer country between the Omsamculo and the Omcomas, *Drège!*

40. L. *humifusa* (Burch! Cat. Geogr. n. 3927), ramis filiformibus prostratis pubescentibus, stipulis solitariis parvis oblongis subulatisve, foliolis obovatis obcordatisve supra glabris subtus puberulis, floribus oppositifoliis solitariis breve pedunculatis, calyce tubuloso, vexillo obovato acuminato carinaque obtusa vix longiore extus puberulis.—*Lipozygis humifusa*, E. Mey. Comm. p. 77?

South Africa, *Burchell!* n. 3927; at the foot of the Witbergen, near Schiloh, *Drège.*

41. L. *radula.*—*Lipozygis radula*, E. Mey. Comm. p. 77.—Unknown to me.

Nieuwe Hantom *Drège.*

42. L. *mollis*, suffruticosa, nana, molliter sericeo-cinerascens, ramulis brevibus adscendentibus, stipulis solitariis parvis, petiolis elongatis, foliolis oblongo-cuneatis, floribus 1-4 terminalibus oppositifoliisque breviter pedicellatis, calycis puberuli lacinia infima setacea cæteris breviore, vexillo orbiculato carinaque obtusa subæquilonga molliter villosis.—*Lipozygis villosa*, E. Mey.! Comm. p. 79. *Leptis mollis*, Steud. Nom. Bot. ed. 2.

Liliefontein in the Camiesbergen, *Drège!*

43. L. *pumila* (Eckl. et Zeyh. Enum. p. 178?) suffruticosa, diffusa, ramosissima, sericeo-pubescens v. subargentea, stipulis parvis solitariis, foliolis parvis obovato-orbiculatis v. late cuneatis, floribus in pedunculo brevissimo 2-4 pedicellatis, calycis laciniis subæquilongis, vexillo obovato subci-

liato carinam obtusam arcuatam glabram subæquante, legumine adpresse pubescente calyce subduplo longiore demum vix turgido.—*Lipozygis erubescens,* E. Mey.! Comm. p. 76. *Leptis erubescens,* Steud. Nom. Bot. ed. 2.

Stony places on the little Fish river ad Zwaanepoolspoort, *Drège!* near the Gauritz river, *Ecklon and Zeyher.*

*** *Foliis ternatis, carina obtusa, legumine turgidiore piloso.*

44. L. *versicolor,* suffruticosa, diffusa, ramosissima, subvillosa, stipulis parvis solitariis, foliolis parvis obovato-v. cuneato-oblongis subsericeis, floribus solitariis breviter pedicellatis oppositifoliis, calycis laciniis subæquilongis, vexillo obovato acuminato subciliato carinam obtusam arcuatam glabram subæquante, legumine laxe piloso calyce paullo longiore demum vix turgido.—*Crotalaria versicolor,* E. Mey. Linnæa, 7. p. 152. *Leptis versicolor,* Eckl. et Zeyh. Enum. p. 175. *Leptis divaricata,* Eckl. et Zeyh. l. c.? *Leptis filicaulis,* Eckl. et Zeyh. l. c.? *Lipozygis Kraussiana,* Meissn. in Lond. Journ. Bot. 2, p. 79?

Uitenhage, on the Zwartkops and Fish rivers, *Ecklon and Zeyher,* (*Zeyher!* n. 465.)

45. L. *tenella* (Eckl. et Zeyh.! Enum. p. 178), suffruticosa, humilis, decumbens v. erectiuscula, patentim pilosa, stipulis solitariis linearibus, foliolis oblongis sublinearibusve, calyce profunde 5-fido piloso corolla parum breviore, vexillo ovato carinaque obtusa æquilonga glabris v. apice parce pilosis, legumine demum turgido piloso-hispido calycem paullo auctum superante.—*Crotalaria tenella,* E. Mey.! Linnæa, 7. p. 152. *Lipozygis tenella γ. piloso-villosa,* E. Mey.! Comm. p. 78.

Uitenhage, on the Zwartkops and Olefants river and in Adow, *Drège! Ecklon and Zeyher! Mundt!* and others.

Lipozygis tenella α and β E. Mey., from higher stations in the interior, scarcely belong to the same species, but without a greater number of specimens it is difficult to determine them accurately.

46. L. *calycina*, suffruticosa, humilis, decumbens v. erectiuscula, ramosissima, patentim pilosa, stipulis solitariis linearibus, foliolis obovatis oblongis v. rarius sublinearibus pilosis, calyce piloso profunde 5-fido corollam subæquante, vexillo obovato carinaque obtusa subæquilonga sericeo-villosis, legumine turgido piloso-hispido calycem valde auctum vix æquante.—*Lipozygis calycina*, E. Mey.! Comm. p. 78. *Leptis calycina*, Steud. Nom. Bot. ed. 2.—This little plant has much of the habit of *Ononis reclinata;* it varies much like the preceding species, but some of Drège's specimens may possibly be distinct.

Caffer country to the N.E. of the colony: Katberg and Kliplaat river, *Drège!* Thaba Uncha, Vaal river and Macalisberg, *Burke!*

**** *Foliolis ternis, carina acuta.*

47. L. *lenticula*, prostrata, pumila, subsericeo-pubescens, stipulis solitariis parvis, foliolis parvis obovatis v. cuneato-oblongis, floribus solitariis oppositifoliis subsessilibus, calycis subsericei lacinia infima paullo minore, vexillo oblongo acuminato dorso medio puberulo carina rostrata paullo breviore, legumine subfalcato calyce subduplo longiore adpresse pubescente vix demum turgido.—*Crotalaria lenticula,* E. Mey.! Comm. p. 26.

South Africa, *Burchell*, n. 1455, in the Sneeuwbergen on the flat between Rivertje and Nieuwkerkshoogte, *Drège!*

48. L. *diversifolia,* suffruticosa, humilis, decumbens, argenteo-sericea, stipulis solitariis lanceolatis, foliolis ternis v. rarius solitariis oblongo-lanceolatis sublinearibusve acutis, floribus solitariis oppositifoliis breviter pedunculatis, calycis argenteo-sericei laciniis subæquilongis corolla parum brevioribus, vexillo obovato acuminato subsericeo carinam breviter rostratam æquante, legumine canescente calycem excedente demum turgidulo.—*Crotalaria diversifolia* E. Mey.! Comm. p. 77.

Caffer country. Banks of the Basche river, hills near Klein Bruintjeshoogte, grassy plains near Schiloh, *Drège!* Thaba Uncha and Caledon river, *Burke!*

49. L. *micrantha* (Eckl. et Zeyh. Enum. p. 178.)—Unknown to me.

Near the Sunday river in Uitenhage. *Ecklon and Zeyher.*

50. L. *crumanina* (Burch.! Cat. Geogr. n. 2445), procumbens, argentea v. cinerascens, sericeo-pubescens, stipulis solitariis parvis, foliolis cuneato-oblongis, capitulis 3-4-floris sessilibus oppositifoliis, calycis profunde fissi laciniis subæqualibus corollam superantibus, vexillo oblongo carinaque acuta glabris, legumine oblique ovato sericeo demum subturgido calycem vix æquante.—Planta basi lignescens prostrata, ramulis 2-3-pollicaribus v. rarius elongatis foliisque pube densa appressa sericeo-flavicantibus. An ad L. *micrantham* referenda?

South Africa *Burchell!* on the Caledon river (branch of the Nu Gariep), *Burke!*

51. L. *Burchellii* (sp. n.), humilis, decumbens? ramosissima, dense sericeo-villosa, cinerascens v. argentea, stipulis cordato-ovatis orbiculatisve, foliolis obovatis, capitulis densis paucifloris sessilibus, bracteis latissimis subcordato-reniformibus, corolla calyce breviore, vexillo oblongo acuminato carinaque arcuata glabriusculis, legumine sericeo demum turgido calycem æquante.—Species bracteis distinctissima, hinc sectioni 6tæ hinc 8væ affinis.

South Africa, *Burchell!* n. 2539.

The following species, with which I am unacquainted, have also been referred to some of the genera here united under *Lotononis.*

Lotononis laxa, Eckl. et Zeyh. Enum. p. 177.—Near Schiloh.

L. *pungens,* Eckl. et Zeyh. l. c.—Between the Fish river and Cafferland.

L. *depressa,* Eckl. et Zeyh. l. c. p. 178.—Between the Gauritz river and the Langekloof.

L. *affinis,* Eckl. et Zeyh. l. c.—Near the Gauritz river.

L. *decidua,* Eckl. et Zeyh. l. c.—Albany district.

Telina capnitidis, E. Mey. Comm. p. 69.—Witbergen.

Lipozyges argentea, Meissn. supra, p. 80.—Uitenhage.

Amongst Thunberg's *Ononides*, not mentioned above, there may also possibly be some species distinct from any I have seen, but until his specimens can be examined they must remain doubtful.

(To be continued.)

Remarks on the Distinction of Species in Nature, and in Books; preliminary to the notice of some variations and transitions of character, observed in the native plants of Britain.

By HEWETT C. WATSON, ESQ.

It is made abundantly evident by each successive publication on the plants of Britain, that our native botanists are yet far from agreed upon the limits and characters of the species which they describe. Since the period when single specific names, and exact descriptions superseded the loose nomenclature of the older botanists, we have had Floras of England successively from the pens of Hudson, Withering, Smith, Lindley, and Hooker; besides several others, which experienced a smaller share of popular favour and support. In no two of these works, is there the same arrangement of individual plants into species, or of species into genera. Forms or varieties which have been united into single species by one author, have been disjoined by others, who have named and described them, as if distinct species. It is less remarkable, that many such changes should have been made in generic arrangements; since genera are allowed to be purely conventional groups. But species are commonly believed to have a distinct and permanent existence in nature, and ought, therefore, to remain the same in books which profess to describe them. Yet, we still seem to be equally as far as ever from this settled state of affairs with reference to the limits of species. Nay, looking to several recent subdivisions of long received species, it might almost be said, that we are now farther off than ever.

In the course of this present year, 1843, another volume has been added to the list of our descriptive floras, in the "Manual of British Botany," by Mr. C. C. Babington; and it still adds also more examples to the discords of opinion respecting the limits which should be drawn between species and varieties. To the great assistance which the author must have derived from the works of his predecessors, he has joined his own long and diligent study of the same plants in the wilds of nature, and in collections for the herbarium. As the result of his labours, we see the combination of some alleged species, which had been held distinct by his predecessors, and likewise, (probably in more numerous instances) the sub-division of other species which they had described as one and the same. Moreover, we occasionally observe added to his notices of varieties, still retained as such, the significant hint of "probably a distinct species." Are we to conclude from this hint, that the sub-division of species has not yet attained its *maximum?* I fear so; and yet, I will venture to say (but certainly without wishing to evince any disrespect to Mr. Babington, whose acuteness of observation is to be admired,) that it requires no magical foresight to predict the early re-union of several of his disjunctions, already made, or apparently intended to be made hereafter.

While so much uncertainty is thus shown to remain, and views so discordant are continually put forth, it must be obvious enough that there is a want of some guiding principles, or practically recognized rules, by which the validity of alleged species may be more satisfactorily tested. In the absence of any such rules, or their practical neglect if such rules exist, each describer of plants is guided by his own individual experience and wishes. There may appear something strange in thus writing "wishes," where the professed object is, to give an exposition of the realities of external nature. But I will keep to the word, and digress, for a few lines, into an explanation of its use here. There can be no doubt, with those who are at all accustomed to estimate the minds and motives of others, that the first introduction of many unreal species into books, and often too their subsequent retention there, are sacrifices of scientific truth, to the vanity of those botanists who are ambitious of appearing as discoverers of something that was previously unknown, or as elucidators of something that was previously obscure.

The custom of joining the name of the botanist, who first describes a new species, as an authority for the name he gives to the species, is good and proper enough in itself. But there is a highly unfortunate extension of the good practice, in doing the like with the names of those after-botanists, who only change the names of known plants. By their subsequent change of name, the original describer is robbed of that historical record which formed the honorary reward of his industry and knowledge; while the mere inventor of the new name becomes, in appearance, the authority for the species also. Those who can discover nothing themselves, or who can get no novelty to describe, are, at any rate, able to divide and re-name the genera or species already well-known; and by so doing, they can acquire a sort of spurious claim to put the abbreviation of their own names along with those of the re-named plants. Hence come the rapid increase of false species, and the confusing subdivisions of well-defined and long-recognized genera. The work, above mentioned, affords striking examples of this evil, in recording the invention of several pretended species of *Poa*, and the uncalled-for change of name in familiar species of *Bromus*, which are converted into species of *Serrafalcus*. I much regret to see Mr. Babington thus give sanction and circulation to these trifling vanities: the changes are not his own, except by adoption.

This short digression is not out of place here. It might, perhaps with advantage, have been continued farther. The confusion which ensues from allowing the determination of species to rest on individual vanity, instead of being confined by practical rules, is an evil that is yearly increasing, and one that ought to be discountenanced as much as possible. But what other tests are there, in which botanists will give a general acquiescence, although they thus frequently neglect them in practice? Some tests certainly exist, as floating ideas in the minds of botanists, and are occasionally alluded to in books. They are admitted even in the pretexts made for evading them, as evidenced in the ludicrous eagerness with which small botanists assure us (in reference usually to some petty variety on which they have bestowed a specific name) that "it is perfectly distinct," that "it may always be known by its narrow leaves," that "it retains its characters in cultivation," and so forth. Cannot those tests, then, be made to bear more directly on the determination of our true species, instead of being rather made into plausible arguments for defending the creation of false species?

In the first place, let it be supposed that two plants are before us, which are marked by some obvious differences of external characters, although generally corresponding one with the other. Let it be next supposed, that after some change of soil, or other circumstance, those differences become less and less, until they finally disappear. In this case, if fully assured of the fact, botanists would agree to unite the two plants, and all others alike either of them, under one specific name. As an illustration, it may be here mentioned, that a root of *Festuca loliacea* (Huds.) was transplanted into my garden, in the year 1841; also a root of *Festuca pratensis* (Huds.). In this year, 1843, the former still produced several racemes of nearly sessile spikelets, such as are seen in the wild plants so named; but along with these, there were others in which the peduncles of the lower spikelets were elongated, branched, and bearing two to six spikelets each. The raceme was thus changing into a panicle, which closely resembled some of the least-branched panicles produced from the root of *Festuca pratensis*. Though the transformation was not quite complete, it had proceeded far enough to show that these two supposed species are only forms of one natural species.

Secondly, let it be found impossible to convert one form into the other, merely by change of external circumstances affecting the individual plants, but that one of them will reappear in plants raised from seeds of the other, either in the first descent or in any future progeny. Here, again, all botanists would consent to unite both forms under one specific name, no matter how wide their differences might be. It is said that *Anagallis arvensis* has been raised from seeds of *Anagallis cærulea* ; also, that *Primula vulgaris* has been raised from seeds of *Primula veris.* If there be no mistake in the facts, these couplets of alleged species clearly constitute only single real species. It is seldom, however, that well-marked varieties can be thus converted in a single descent: more commonly the change is gradual, and fully completed only after numerous descents, each in turn becoming less and less like the original plant or variety from which they are descended. Our garden vegetables show this forcibly; for a gardener never expects to see the wild stocks when he sows varieties of the cabbage, lettuce, pea, carrot, &c. Yet, very commonly, some few plants in the seed-beds of a garden may be found retrograding towards the typical or wild form; and if these be not thrown out, the race or variety quickly deteriorates.

Unfortunately, the satisfactory tests of direct metamorphose and conversion through seed, are very seldom brought to bear upon the determination of species, even in those cases where the tests might be applied with ease and certainty; and, in a vast many instances, it is impossible to apply them. Systematic botanists are, therefore, usually content to adopt as distinct species, all those forms which present some marked peculiarities, by which, as it is supposed, they can certainly and always be distinguished from each other. But it has, from time to time, been shown, that several of the supposed species, so described, were not permanently distinct from each other; while a still larger number of them may be said to be under suspicion. This leads to the necessity of distinguishing two kinds of species; namely, those forms which nature appears to have made permanently distinct, and those which are described in books under a supposition that they are so. The former I shall beg here to designate *natural species;* applying to the latter the epithet of *book species.* A book species and a natural species may be strictly identical, or one natural species may be improperly divided into two or more book species. *Fraxinus excelsior*, as now understood in this country, is an example of identity; but when *Fraxinus heterophylla* was absurdly made into a second book species, the identity was destroyed. Probably, it does still sometimes occur, that two or more natural species are incorrectly described as one in our books; the *Myosotis scorpioides* of Linnæus was formerly an example of this. It is my present object to enumerate some additional tests, less precise than the foregoing, but which may assist a decision upon the validity of book species; that is to say, how far they are truly identical with natural species.

Thirdly, then, in continuation of the former and better tests, it may be said that characters which are mutually interchanged between two book species, must be insufficient to prove them really distinct species; while the fact of the interchange goes far to establish their identity as a single natural species. When a complete series of intermediate forms is produced by this interchange of characters, which gradually become more and more unlike one of the book species, by assuming more and more the characters of the other book species, until varieties of the one coalesce with varieties of the other; the series may then be taken as equivalent to a demonstration, that the two book species constitute together only a single natural species. Thus, *Viola arvensis* (Murr.) is so completely united with *Viola tricolor*, by a continued series of intermediate forms, that no doubt can remain respecting their identity as one species in nature, although they have been described as two species in books. Again, among the few specimens of *Erica Mackaii* (Hook.) which I have had the opportunity of inspecting, a gradual transition towards *Erica Tetralix* is so decidedly shown, that I greatly suspect their identity would be proved by a sufficiently careful examination of the former in its native localities. This opinion is much strengthened by the frequent appearance of characters assigned to *E. Mackaii* among plants of *E. Tetralix:* the ovate leaves, their glabrous upper surface and (more rarely) mid-rib beneath, and their crowded position on the flowering shoots, may all be found on plants of *E. Tetralix.*

Fourthly, characters which are common to two book species in the earlier stages of their development, but which are lost by one of them in its progress to maturity, are not sufficient proofs of their distinctness as natural species. The uncertainty of such distinctive characters is occasionally demonstrated by their permanence or re-appearance in individual plants of the one book species which usually loses them; or, *vice versâ,* by their disappearance in individuals of the other book species, which commonly retains them. For example, *Veronica hirsuta* (Hopkirk) is distinguished from *V. officinalis,* chiefly by its entire capsules, as opposed to the emarginate capsules of the latter. In both book species the capsules are entire at first, those of *V. officinalis* becoming emarginate in their progress to maturity. But I have gathered strong plants of the latter, in which the full-grown capsules retained the infant-form, being obovate and not in the least degree emarginate. And I possess also a specimen of *V. hirsuta,* from the Botanic Garden of Edinburgh, on which there is a small capsule, slightly emarginate. I regard them as constituting only one species in nature. Even Mr. Babington unites them, although it is done under the saving clause, applied to *V. hirsuta,* "probably a distinct species, since it retains its characters in cultivation." The varieties of *Betula alba* afford another example. *Betula glutinosa* (Fries) is said, in the Manual of British Botany, to be readily distinguished from *B. alba,* by its "cordate-ovate" leaves, those of the letter being "rhomboid-triangular." *Betula pubescens* (Ehrh.) is there described as a variety of *B. glutinosa,* known by its downy leaves, peduncles and young twigs. Now, the fact is, that the young plants of *B. alba* bear completely cordate leaves: the leading shoots of older trees, as well as the fast-growing shoots which come from lopped branches or the lower part of old stems, also produce cordate leaves; while the weaker, and often drooping twigs on the very same trees, are clothed with rhomboid or triangular leaves. Moreover, the leaves and bark of the young plants are usually, if not always, pubescent, as also is the case with those of strong shoots on grown trees. These facts lead to the presumption of *Betula alba, glutinosa*, and *pubescens* being only forms of a single natural species. Of the alleged difference in the fruit and serratures of the leaves, I will state something hereafter.

Fifthly, the remarks on *Betula alba* naturally lead to another rule; namely, that contrasts of characters should be made between parts which are at equal stages of growth, and under equal conditions of luxuriance: if made otherwise, they are likely to prove fallacious. Thus, it is stated that the style of *Erica Mackaii* is "protruded;" that of *Erica Tetralix* being "usually included." In *E. Tetralix* (and probably in *E. Mackaii*) the corolla and pistillum are equal when the flower first opens, the pistillum gradually elongating afterwards until the corolla fades, when the style is protruded by about a fourth of its length. The included or protruded style is thus a condition of age, and valueless as a distinctive character. As an example of the propriety of making contrasts only between plants or parts in equal conditions of luxuriance, I will take *Cerastium alpinum* and *Cerastium latifolium*, of the British Flora. In the Manual, the latter is reduced (incorrectly, I think) to a variety of *C. alpinum*; but they are both shortly described there, and in their descriptions it is stated that the stems of *C. alpinum* are "mostly simple," those of *C. latifolium* "branched." On the contrary, it is said in the British Flora, that *C. alpinum* is "much branched." The fact is, both species are much branched; *C. alpinum*, perhaps the most so: and when growing free from other herbage, this latter species forms dense cushion-like masses, such as we see formed by *Saxifraga hypnoides* or *Sedum reflexum* under the like circumstances. But if a starved or half-smothered plant of *C. alpinum* should be compared with a healthy and free-growing plant of *C. latifolium*, doubtless the terms "branched" and "simple" might be found applicable enough.

Sixthly, characters should as little as possible be taken from conditions which are known to be very variable in other plants, and more particularly, if known to be inconstant in species nearly allied to those under consideration. Appendages of the cuticle, for example, as hairs and ramenta, are very uncertain. *Bromus mollis* and *B. racemosus* may be regarded as book species, separated almost solely by the presence or absence of pubescence, which varies much in these and allied species: even *B. commutatus* and *B. secalinus*, usually described as being glabrous, are not invariably so in nature. We have another example of inconstancy, in the awns of grasses. *Lolium multiflorum* has been distinguished from *L. perenne* by its awned flowers. But the analogy of *Lolium temulentum* and *L. arvense* suggests the weakness of that character; and finding the other alleged distinctions unsound, I must now look upon *L. multiflorum* as a book species only, properly reduced to the natural species L. *perenne.* Again, the length of the internodes is a very changeable character in plants. *Polygonum maritimum* and *P. Roberti* (Lois. Br. Fl.) are in part distinguished by the relative length of their stipules and internodes, acknowledged to be variable in these plants, and particularly variable in the allied species, *P. aviculare.* I suspect *P. Roberti* to be only a book species, which should be received rather as a variety of *P. maritimum.* So, also, I would say that a little more or less of membrane in the bracts and sepals of the genus *Cerastium* is a very insufficient character for specific distinctions. The half-membranous bracts, said to distinguish *C. semidecandrum* from *C. atrovirens* and other alleged species, would go to disunite plants which grow intermixed, and are in all other respects "as like as two peas in a pod." But in the whole range of botanical characters we could scarce find better examples of inconstancy, than are seen in the form and toothing of the perigone in the genus *Atriplex*, which are, nevertheless, made grounds for distinction between book species.

It would be easy to extend these remarks on the distinction of species in books and in nature, by suggesting other rules, applicable in some degree, as tests of the validity of book species; but they are already longer than was wished or anticipated, when I began to put them on paper. It is hoped that they may prepare the way for proper inferences, (as I conceive them to be), respecting the limits of certain species, in which variations have been observed from the characters commonly assigned to them in books; more particularly in the two recent works on the plants of Britain, to which I have already several times alluded. Such variations must be reserved for another occasion; though some of them, it may be seen, have incidentally been mentioned here, as illustrations of my grounds for rejecting some species and some specific characters which are now admitted by other botanists.

In conclusion, I may as well confess at once, that I have been urged to write upon this subject, chiefly on account of the impediments which mere book species prove to me, in prosecuting a favourite department of botanical science; namely, inquiries concerning the geographical relations of plants. True lists of species, both as regards their names and their distinctness in nature, are essential to such inquiries; and yet it is impossible to make them true, while describers of plants are so continually changing both names and species in their books. Fortunately, they cannot change the species in nature also, if permanently distinct species do certainly exist.

On the Embryo of TROPŒOLUM MAJUS. BY W. WILSON, ESQ.

(*With two plates.* TAB. XXII. XXIII.)*

Two essays on this subject have already appeared before the botanical world; the first by Schleiden, embodied in his memoir on the ovule of Phanèrogames, in support of his novel anti-sexual theory; the other by Herbert Giraud, M.D., in the Proceedings of the Linnæan Society for Feb. 1842, p. 123; and as both of them are materially erroneous, I propose to give a critical examination of the labours of these, my precursors, in conjunction with a true account of the structure of the Embryo.

Let me observe, by way of preface, that I have spent some time in researches of this kind with the same design as that which actuated Dr. Giraud, and that I first entered on the study of this particular plant with the full expectation of confirming, rather than of disproving his statements. In this I was disappointed, and I have, in consequence, addressed myself to the arduous task of thoroughly investigating this very remarkable subject. My labour has been well rewarded, and the results are the more satisfactory, inasmuch as they furnish the strongest argument I can ever hope to bring against the theory of Schleiden. If an observer overlooks or misconceives things which are obvious and tangible, his statements in reference to what is so recondite as to be hidden from those who review his labours, far from supplying a solid basis whereon to found a theory opposed to all analogy, may be safely disregarded. Embryogeny seems to be, as yet, a science "far more fertile in inductions than in facts;" and it will be seen that Schleiden has ventured to theorize in opposition to facts, which he might easily have discovered, if he had been only a little more scrupulous and diligent. I beg to refer the reader to the translation of

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* By mistake the numbers on the plates are Tab. xx. and xxi. The reader is requested to correct them.

Schleiden's Memoir, given in *Annales des Sciences Naturelles*, Tom. ii., particularly to p. 140, and the figures illustrative of *Tropœolum majus;* as it is only through that medium that I know anything of Schleiden's previous labours.

Both Schleiden and Giraud assert that there is a visible conducting channel of tissue from the style, through the carpellary cavity, as far as the exostome. After very careful scrutiny, I find not the smallest evidence to support this statement. To prove these observers absolutely in the wrong, is, of course, impossible; but in the same mode that I impeach Schleiden's testimony, I may argue against that of Giraud. He states that the nucleus is covered by only one integument; but the ovule unquestionably consists of two, viz., the primine and secundine, the latter of which projects beyond the primine to form the *micropyle*, and although these coats are blended below, they are decidedly separate at the top of the ovule. It is more difficult to discern the exact limit between the secundine and the nucleus. The existence of the latter is most apparent in the lower part of the ovule, where it forms a yellowish flask-shaped body, more opaque than the surrounding mass. Schleiden's fig. 40 does not faithfully represent it. The internal cavity is nearly as it is exhibited in that figure; but its apex reaches higher up, almost to the micropyle, and it is lined throughout with a very delicate lax membrane, which is the Embryo-sac. It is that which encloses, and immediately surrounds the oblong body from which is produced the nascent embryo, at the period when it first becomes intelligible, namely, some days after fecundation, and only a short time before the faded corolla falls away, a period not well marked in Giraud's paper. I cannot find any proof, in all my numerous investigations, of the introversion of the *sac embryonnaire*, in the manner assumed by Schleiden; and in this plant his hypothesis is quite contradicted by the fact that when the embryo has descended half way down the cavity, the pedicel which supports it is still surrounded by the lax membrane: this feature may easily escape the notice of an incautious or unskilful observer, on account of the extreme tenuity of the membrane, but I am quite satisfied that it exists.

In Giraud's "fourth period" after impregnation, the primary utricle, at its lower extremity, next to the base of the nucleus, is said to be terminated by a spherical mass of cells, constituting the first trace of the embryo;" and its upper portion "at this period assumes the character of the suspensor," (Mirbel) which subsequently protrudes its upper extremity "through the apex of the embryo-sac, the apex of the nucleus, and the micropyle;" and from this extremity a number of cells "hang loosely in the passage leading to the conducting tissue of the style."

The Embryo makes its first appearance at the top, and not at the bottom of the cavity of the nucleus;—when it has reached the lower part of the ovule it is in a state considerably advanced, and is no longer spherical.

In describing the Embryo, and its process, according to Schleiden, the primary article consists of an oblong cellular body (the extremity of a pollen tube), with a lateral branch which bears the rudimentary embryo at its extremity. The whole is at first enclosed within the ovule, but subsequently "the coats of the ovule which cover it are obliterated;" and while the lateral branch of this cellular body develops in the cavity of the ovule to form the embryo, the residue grows outside, and expands into a cellular circumambient thread. The truth is, that this cellular body neither protrudes from the micropyle; nor does it gain an outlet in consequence of the obliteration or "resorption" of the coats of the ovule:—on the contrary, *it perforates the coats of the ovule immediately below the micropyle,* on the side most remote from the axis of the flower; and instead of "loosely hanging cells in the passage leading to the conducting tissue of the style," I find a second process on the side next the axis of the carpella, which passes below the micropyle, into the cellular tissue which constitutes the neck of the ovule (containing amylon), and then proceeds down a minute channel in the substance of the carpellary integument parallel with the axis, ultimately reaching to a pore situated at the lowest point of attachment of the carpel to the receptacle. The part where the three branches unite is swelled into a roundish knob, containing in its centre a mass of peculiarly formed tissue which at length becomes opaque.

It is scarcely to be doubted that these two processes fulfil the office of rootlets in the first stage of germination, while the embryo is still enclosed within the carpellary integument; and that if the latter were removed before the time of growth, the seed would fail, in consequence of the injury which would almost inevitably be sustained by these rootlets. One of them would necessarily be broken off. It would be interesting to know whether, in germination, both the processes pass out as rootlets from the pore.

The following details, with figures taken from actual dissections, will supply what is wanting to complete my description.

TAB. XXII.

FIG. 1.—Shews a longitudinal section of a young carpel, from a newly expanded flower:—*a*, in this, and in all the other figures, indicates the *micropyle* of the ovule; *b*. the primine or outer integument; *c*. the nucleus; *d*. cavity of the nucleus.

FIG. 2. Another carpel rather more advanced; *d*, marks the place where the rudiment of the embryo first appears.

FIG. 3. The oblong body from which arises the embryo from the last figure, (*highly magnified*). It is enclosed in the membrane (*embryo-sac*), which lines the cavity of the nucleus throughout its entire length.

FIG. 4. The micropyle, from fig. 2, more highly magnified. It is formed of the thickened and indurated mouth of the secundine, and is of a yellowish colour; *d*, the apex of the embryo-sac, containing the embryo in a rudimentary state.

FIG. 5. The oblong body, now become evidently branched,

at whose lowest extremity is found the nascent embryo, with a portion of its sac, from a flower after the corolla is withered.

Fig. 6. This section shows the upper part of an ovule in a more advanced state; *e*, the globular extremity which afterwards becomes the embryo. The processes above it are still enclosed within the coats of the ovule; *f*, the process which perforates the coats of the ovule. A separate representation of these parts is given at fig. 8.

Fig. 7. Section shewing a carefully drawn representation of the placental tissue, through which the process from the embryo finds its way towards *g*, and subsequently extends its course, parallel with the axis of the carpella, to *h*, along a channel lying within the carpellary integument; *i* indicates the place where Schleiden and Giraud imagine the existence of "the conducting channel" from the style to the micropyle; *v*, in this, and in other figures, shows the bundle of vascular tissue which proceeds from *h*, the lowest point of attachment of the carpel, to *n*, the base of the ovule.

Tab. XXIII.

Fig. 8. Section of a carpel still more advanced: the branch, *f*, has perforated the coats of the ovule, below the micropyle, *a*; the natural size of the carpel is shewn at fig. 9. The albuminous substance of the nucleus is now become corrugated, and the embryo-sac is continuous with it, following all its convolutions.

Fig. 9. Section of a carpel still more advanced, shewing a section of the young embryo, with rudimentary cotyledons and plumule; also the two root-like processes, which have now attained their full length. The circumambient process, which has passed down the external face of the ovule to its base, has in this instance penetrated the tissue of the carpel at *o*; *g* is the prolongation of the process marked in the last figure, with the same letter.

Fig. 10. Section of a carpel nearly ripe. Here, the upper

part of the ovule has become much bent and elongated; so that the micropyle, *a*, is inconspicuous. The substance of the nucleus is nearly obliterated, and the upper part of the cavity is much corrugated. At the point where the embryo, *e*, is connected with the root-like process at *l*, the latter is firm and somewhat tuberculated. It thence becomes attenuated into a cellular thread, whose course may be traced to *k*, where, from a tumid knob, two branches are sent off, the one (*f*) round the seed on the external face, within the carpellary integument; the other, (*g*), passes down a narrow channel in the substance of the carpel, to *h*, the lowest point of junction with the receptacle, where there is a small pore; *i*, is a portion of the style. The radicle of the embryo is covered with a thin membrane, which arises from the base, *l*. In an early stage, this membrane probably covers the whole of the embryo, properly so called, and may perhaps be regarded as the true vesicule primordiale of Mirbel. In one example, an embryo was seen fixed and detained in the position marked *m*, abortive, but in a state of considerable development, while the cavity below, equally large with that here represented, was filled only with liquid.

FIG. 11. The process from the embryo, at its junction with the radicle, more highly magnified than at *l*, in the last figure. The embryo has been detached, in order to show the membrane, *p*, which surrounds the radicle.

In conclusion, let me, with Mirbel and Spach, strongly urge the adoption of a scrupulous and well-regulated method of conducting these and similar investigations. I do not hesitate to declare, that more will be learned by a good manipulator, under an ordinary lens, than by the possessor of the best microscope, who is unskilled or careless in the employment of dissecting instruments. It is while the parts are in a state of mobility; not after the dissections are made, and in a state of rest, that we acquire just ideas of structure and of form. The fingers, the organ of touch, are essential to the attainment of correct views of things too small for the naked eye; and never should the visual organ alone be trusted in the determination of microscopic subtleties. If the observer's eye be not constantly aided and educated with his hands, he is almost certain to be misled; though few persons, as yet, seem to be aware of the fact; and to their ignorance may be attributed not a few of the errors which appear in print, even at the present day. To those who practically acknowledge the justice of these remarks, and to them only, the preceding memoir is now submitted.

W. Wilson.

Warrington, Nov. 12, 1843.

Notices of some Brazilian Fungi. By the Rev. M. J. Berkeley, M.A., F.L.S.; *being a sequel to the Contributions towards a* Flora of Brazil, by G. Gardner, Esq.

(*With a Plate.* Tab. XXIV.)*

1. Agaricus (Lepiota) *cepæstipes, Sow. Fr. Ep.* p. 17.

On sandy ground. Oeiras, Prov. of Piauhy.

Resembling very closely the form represented in Fl. Dan. t. 1798. The color of the whole, when gathered, was sulphur-yellow. The gills are truly remote; the stem, which is equal and slender, not sunk into the pileus; the ring erect and persistent, and the scales of the pileus strongly marked. Sporidia yellow, elliptic, rather large, nearly colourless when seen by transmitted light.

2. A. (Tricholoma) *prægrandis,* n. s. pileo convexo umbilicato demum expanso visciduio glabro valde carnoso; stipite valido deorsum incrassato bulboso solido intus fibroso, extus subcartilagineo; lamellis adnatis confertis postice leviter rotundatis, antice falcatis.

Grassy places. Minas Geraes. Oct. 1840.

Pileus 8-9 inches in diameter, convex, umbilicate even when of a considerable size, at length expanded, quite smooth, soiled with portions of dead grass, &c., adhering to it; flesh thick.

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* By an oversight, the numbering on the following plates is erroneous; and the subscribers are requested to correct them. Tab. xxii should be xxi. —Tab. xx., xxii.,—Tab. xxi., xxiii.,—and Tab. xxiii. should be xxiv.

Stem 7-8 inches high, 1½ inch thick in the centre, 2½-3 inches thick at the base, which is incrassated and bulbous, somewhat rooting, and retaining a quantity of earth round it, by means of its cottony mycelium, solid, stringy within, externally smooth, subcartilaginous.

Gills moderately broad, attached and slightly rounded behind, falcate in front. The colour of the whole in a dry state is a dull umber; the stem and gills being darker. Unfortunately, no notes were preserved of its condition when gathered.

This magnificent species has the habit of Ag. grammopodius, which, however, it exceeds in size. It belongs, with it, to the section Tricholomata Hygrophana of Fries' Epicrisis. Like too many exotic species, it is necessarily imperfectly defined, but it is too remarkable to omit altogether.

3. A. (Clitocybe) *rheicolor, Berk. Ann. of Nat. Hist., vol.* 2. *p.* 376.

On a rotten tree. Minas. Oct. 1840.

4. A. (Marasmius) *ferrugineus,* n. s., pileo membranaceo convexo plicato croceo-ferrugineo, stipite gracili torto cinereofusco glabro nitidiusculo; basi orbiculari pilosiusculo; lamellis pallidis, interstitiis venosis postice attenuatis.

On the bark of a rotten tree. Minas.

Pileus 1½-3 lines broad, convex, membranaceous, plicate, yellow, ferruginous, extremely minutely wrinkled when dry, so as to appear pulverulent. Stem ½-¾ of an inch high, ⅛ of a line thick, cinereous-brown, compressed, twisted, shining, smooth with a glaucous tinge, which arises from extremely minute globules, visible only under a high magnifier; attached by a little downy bulb. Gills pallid, few, attenuated behind, nearly free, with broad veiny interstices. The exact form of the gills and the mode of attachment are scarcely determinable.

This charming little species is allied very closely to

Ag. hœmatocephalus, Mont. and *A. atrorubens*, Berk., but is very distinct from either, being a much smaller species, with a differently coloured pileus. The stem is precisely like that of Ag. hæmatocephalus. The nearest ally amongst European species is, perhaps, Ag. juncicola. Ag. bambusinus, Fr. is too imperfectly described to form an accurate opinion as to its affinities.

5. Ag. (Marasmius) *mitiusculus*, n. s., pileo plano-umbilicato albido rugoso; stipite gracili cinereo-velutino supra incrassato glabrescente rufo; lamellis pallidis, acute decurrentibus, interstitiis plerumque lævibus.

On rootlets with the foregoing species. Minas.

Pileus ¼ of an inch broad, plane depressed and umbilicate, or even somewhat infundibuliform, dirty white, rugose.

Stem about ¾ of an inch high, ⅓ of a line thick, not rooting, but attached exactly as in *Ag. stipitarius;* clothed with very short cinereous velvety down, slightly incrassated above, where it is at length smooth and rufous.

Gills pallid, acutely decurrent, with their interstices, for the most part, even.

Allied to Ag. (Marasmius) *fœtidus.* The specimens are few, and not in so good condition as might be wished, but the characters are so marked, that there will be little difficulty in distinguishing this species.

6. Ag. (Omphalia) *Gardneri, Berk. in Hook. Journ. of Bot., vol. 2. p.* 427.

On the leaves of a palm called Pindoba. Natividade. Province of Goyaz. Dec. 1839.

7. Ag. (Omphalia) *spaniophyllus*, n. s., membranaceus; pileo reniformi brunneo glabro; stipite brevissimo laterali pulverulento brunneolo; lamellis 3-6 ventricosis luteo-pallidis, interstitiis lævibus.

On splinters of wood in the Forests. Natividade. Nov. 1839.

Pileus 2-3 lines across, reniform, smooth, membranaceous, brown; stem extremely short, lateral, brownish, pulverulent; gills about five, ventricose, pallid yellow, with their interstices quite smooth. The hymenium, in perfect specimens, resembles that of *Stereum hirsutum.*

Closely related to *Ag. merulinus,* Mont., but differing in the colour of the pileus. There is also a peculiar appearance about the hymenium of this species, which is not easily expressed in words. It occurs also in Guiana, whence it has been sent by Schomburgk.

8. Lentinus *Lecomtei, Fr. Ep. p.* 388.

On a rotten tree. Arrial das Merces, Minas Geraes. Oct. 1840, with *Lenzites applanata.*

9. L. *villosus, Fr. Ep. p.* 388.

Minas. Oct. 1840. Serra de Araripe. Prov. of Ceará. Answering exactly to the description of Fries in the Epicrisis. This species, which is one of the commonest of the genus, is generally regarded on the continent as L. Berterii, but it is certainly not the species characterised in the Epicrisis, though it may possibly be the plant of Sprengel. Lentinus villosus, Fr. has white distant gills, and curled bristles on the pileus; Lentinus Berterii, Fr. has, on the contrary, crowded cervino-pallid gills, and the bristles straight.

10. L. *Swartzii. Berk.* L. *crinitus, Berk. in Ann. of Nat. Hist., vol.* 10, *p.* 370. *Tab.* 9, *fig* 2.

Brazil.

The species brought by Swartz from Jamaica, which I have described and figured from an authentic specimen in the place above cited, is what Fries has characterised as L. crinitus; but an inspection of the specimen of Agaricus crinitus, in the Linnean Herbarium, which is in very good condition, shows that the plant of Swartz is different. I have therefore named the present species after its original discoverer. I shall hope to take another opportunity of examining the synonyms of the plant of Linnæus, which is larger, and certainly the same with what Brown has figured in the History of Jamaica.

11. *L. tener, Klotzsch. Fr. Ep. p.* 389.

Organ Mountains.

This species approaches very near to the true *L. crinitus* and *L. Swartzii*. I suspect that Klotzsch has made some mistake as to the habitat, no such species from New Orleans existing in the herbarium of Sir W. Hooker. There is, however, the greatest difficulty in understanding Klotzsch's species of Lentinus, from his having named the species in the herbarium, differently from those which he has published in the Linnæa; and having transmitted to Fries the species so published, under wrong names. Nothing can settle the points of difficulty except an inspection of the Herbarium at Berlin, in which he informs us he has deposited specimens.

12. L. *crassipes*, n. s., pileo infundibuliformi ochraceo-cervino centro nigro-squamoso, versus marginem filis densis cervinis circinatis vestito; stipite brevi crasso badio minute squamuloso; lamellis pallido-albis, confertis decurrentibus postice anastomosantibus denticulatis.

Minas Geraes. Oct. 1840.

Pileus 2¼ inches broad, infundibuliform, ochraceous, fawn-coloured, cracked in the centre, and adorned with little black scales, formed of fasciculate hairs; towards the margin, clothed with dense crisped tawny flocci; margin slightly involute.

Stem short and thick, ¾ of an inch long, ½ an inch thick, obese, bay brown, with a few minute scales.

Gills crowded, pallid, slightly denticulate, decurrent, anastomosing at the base.

Distinguished from the allied species, *L. crinitus* and *tener*, by its short thick stem, and other characters of less consequence.

13. L. *velutinus, Fr. Ep. p. 392.*

Minas Geraes.

The most beautiful species in the genus, but extremely variable in size.

14. L. *albidus*, n. s., albidus, cæspitosus; pileis excentricis, tenuibus subelongatis depressiusculis glabris; lamellis integerrimis acute decurrentibus; stipitibus gracilibus deorsum attenuatis albo-pruinatis glabris.

On a lime tree. Inficionado. Oct. 1840.

Cæspitose, dirty white; pileus 1½-2 inches broad excentric, sub-elongated, very slightly depressed behind, quite smooth, and free from striæ.

Stems 1½ inch high, about 2 lines thick, more or less connate, firm, pruinose, attenuated below from their crowded habit.

Gills rather broad, acutely decurrent, quite entire.

This specimen approaches somewhat to *Lentinus friabilis* and *L. Sajor Caju*, but it is distinguished at once from the former, by its not being umbilicato-pervious, and from the latter, by its not being umbilicate or sub-infundibuliform, and by its long stem. The same species, or one very closely allied, occurs at the Cape of Good Hope, and I have seen what appears to be the same, from other quarters.

15. L. *submembranaceus*, n. s., albidus; pileo excentrico suborbiculari, demum subdepresso lobato-fisso, glabro margine submembranaceo; stipite deorsum subæquali cartilagineo-corticato rimosulo; lamellis latiusculis decurrentibus.

On a dead tree near Pinanga. Minas Geraes. Oct. 1840.

Gregarious, dirty white. Pileus 1½-4 inches broad, excentric orbicular smooth, at length more or less lobed and split, slightly depressed behind, but not umbilicate; margin extremely thin, and almost membranaceous.

Stem 1¾ of an inch long, 1-5 lines thick, nearly equal, sometimes, however, incrassated at the base, coated with a cartilaginous bark, in which are numerous minute fissures.

Gills rather broad, decurrent.

Differing from the foregoing in its thinner pileus, and generally equal cartilaginous, rimulose stem. It attains sometimes, a considerable size, but perfect specimens occur as small as *Lentinus albidus*, and are then with difficulty distinguished. There is no doubt, however, that the two species are really distinct.

16. Lenzites *applanata, Fr. Ep. p.* 404.

Goyaz. Feb. 1840. Arrial das Merces, Minas Geraes. On the banks of the Parahibana. Oct. 1840.

17. Polyporus (Mesopus) *lentus, Berk. Eng. Fl., vol.* 5, *Part* 2, *p.* 134.

On a rotten stem. Arrial das Merces. Oct. 1840.

This appears to be precisely the same species which occurs in England, not unfrequently, on Ulex Europæus. There is not a single distinguishing character, at least, in the dry specimens.

18. P. (Mesopus) *similis*, n. s., pileo plano-infundibuliformi lento-coriaceo rigido glabro lævi margine ciliato; stipite deorsum incrassato velutino glabrescente; poris parvis pallidis angulatis; dissepimentis tenuissimis denticulatis.

On an old tree. Minas Geraes. Oct. 1840.

Pileus 1-1½ inch broad, plano-infundibuliform, of a tough coriaceous substance, rigid when dry, quite smooth except at the margin, which is ciliated with pale rigid bristles.

Stem ¾-1 inch high, sometimes equal, in general attenuated below, clothed with very short velvety down, which at length vanishes, leaving the stem nearly smooth.

Pores small, pallid, angular, sometimes elongated; dissepiments extremely thin, more or less torn and denticulate. The colour of the pileus and stem is pallid umber, but is probably different in the recent plant.

This species is undoubtedly near to *Pol. brumalis;* from which it differs in its more infundibuliform pileus, its velvety root, squamulose stem, its pallid, not white pores, and other points. I have seen no specimens of *Pol. brumalis* which were not at once distinguishable from the present by a peculiar appearance about the pores. The whole habit is different from that of *Pol. Guianensis, Tricholoma, apalus* and *gracilis*, with which it agrees in the ciliated margin, being a far less elegant species.

18. P. (Mesopus) *apalus*, n. s. pileo plano-umbilicato glaberrimo carnoso-lento submembranaceo azono, margine ciliato; stipite gracili æquali flexuoso rufo sericeo-glabro; poris parvis subæqualibus angulatis, dissepimentis tenuissimis.

On a rotten tree. Minas Geraes. Oct. 1840.

Pileus 1 inch broad, plano-umbilicate, extremely thin and delicate, so that the pores are visible through it, even, not the least scrobiculate, zoneless; margin laciniato-pilose.

Stem 1¼ inch high, ¾ of a line thick, rufous, flexuous, smooth, with a few adpressed silky fibrillæ.

Pores small, 1-80th of an inch in diameter, angular, nearly equal, much longer than the substance of the pileus; dissepiments extremely thin. The pores and pileus are of a more or less ochraceous tint. In the recent plant, they are probably nearly white.

This elegant species is allied to *P. Tricholoma* and *Guianensis,* but it differs from both in its less coriaceous substance, and from the former, in its smooth, not velvety stem.

Polyporus gracilis, Kl., again agrees with it in many points, and it has certainly a ciliated margin, though this character is so obscurely marked, that I had overlooked it, until my attention was called to the point, on comparing it with *Pol. Guianensis,* and *P. Tricholoma.* The pores, however, are extremely minute, and the stem is not above half as thick, and the pileus but half an inch broad.

19. P. (Mesopus) *calcigenus,* n. s., pileotenui coriaceo orbiculari umbilicato, margine plus minus depresso subtiliter velutino, demum glaberrium polito rubro-castaneo zonato minutissime striato; stipite centrali radicante ruguloso subgracili crustaceo-corticato subtiliter velutino fusco intus molli fibroso; poris mediis longis angulatis dentatis intus pallidis.

Natividade, Goyaz. Nov.-Jan. On calcareous soil.

Piles ¾-1 inch broad, thin coriaceous orbicular, umbilicate, with the margin depressed and extremely thin, or acute and repand; at first very minutely velvety, at length quite smooth and shining, of a red chestnut brown, concentrically zoned, and extremely minutely striate with innate fibres: substance tawny.

Stem central, 2 inches long, about 1 line thick, rooting at the base, but obtuse, tawny within, stuffed with spongy

spongy fibres, coated with a thin brownish, crustaceous bark, which is obscurely velvety.

Pores 1-2 lines or more long, $\frac{1}{36}$ of an inch broad, angular, with the dissepiments thick, of the same substance as the lower coat of the pileus, which is paler than the upper and more tawny portion. Some are singularly wrinkled within, but this character is not constant.

This is a most interesting addition to the vast genus *Polyporus*. It clearly belongs to the same section as *P. sacer*, but is distinguished from all the species of the section except that, by its larger pores, and from *Pol. sacer* by its whole habit and nature. If the genus *Trametes* be finally established, this species must be admitted into it.

20. Pol. (Pleuropus) *infernalis*, n. s. pileo flabelliformi integro vel sub-lobato postice depresso tenui acuto demum suberoso-coriaceo glaberrimo, lævi, basi exceptâ striato-rugu-loso hepatico-nigro; stipite brevi laterali nigro sursum incrassato punctato pulverulento; hymenio brunneolo: poris minutis rotundis brevissimis; margine sterili.

On the stem of an old tree. Arrial das Merces. Prov. of Minas Geraes. Oct. 1840.

Pileus 3½ inches broad, flabelliform, quite entire, or slightly lobed and crenate, marginato-depressed behind, suberoso-coriaceous when dry; extremely smooth and even, except at the base, where it is pulverulent, and minutely rugulose and striate; of a black liver colour.

Stem ½-1 inch long, ½ an inch thick, incrassated above, wrinkled longitudinally, and dotted with abortive pores, black, pulverulent, white within.

Pores extremely shallow, punctiform; hymenium brownish.

This very distinct species is allied to *Pol. varius* and *dictyopus*.

21. P. (Pleuropus *luteus*, *Nees. v. Es. Fr. Ep. p.* 445.

A single specimen only, without any special locality.

22. P. (Apus) *australis*, *Fr. Ep. p.* 464.

Minas Geraes.

There is also a very beautiful *Polyporus* allied to *P. sulphu-*

reus, of a soft white substance within, externally smooth, and of a beautiful red-brown. As, however, the pores are not yet formed, and there is but a single specimen, I do not venture to name it.

23. P. (Resupinatus) *xylostromatoides*, n. s. albidus totus resupinatus; mycelio molli elastico intertexto demum porifero; poris parvis angulatis acie subintegrâ.

Minas Geraes. Oct. 1840. On rotten wood.

The mycelium exactly resembles a small thin portion of *Xylostroma giganteum*; white, closely interwoven, and elastic with no distinct border. This at length produces pores which are small, but perfectly visible to the naked eye, angular, with the dissepiments tolerably thick, and nearly entire. It at length becomes incorporated with the wood, and inseparable.

24. Trametes *occidentalis, Fr. Ep. p.* 491.

Minas Geraes.

The specimens differ greatly from the state first described by Klotzsch, but are connected with it by intermediate forms from Cuba, of which I have a specimen from Dr. Montagne, and others from Guiana, collected by Schomburgk. Mr. Gardner's specimens are very strongly zoned, imbricated, and subtriquetrous, with the substance more hard and corky.

25. T. *Hydnoides, Fr. Ep. p.* 490.

Minas Geraes.

26. T. *versatilis, Berk. in Hook. Journ.*

Var. *minor*, poris pallidis, mediis.

On a rotten tree. Minas Geraes.

The Brazilian specimens differ from those from the Philippines and New Orleans, merely in the size of the pores, and their paler colour. The clothing of the pileus is not altogether unlike that of a *Dictyonema*.

27. Favolus *Braziliensis, Fr. Ep. p.* 498.

On the rotten trunk of a tree. Minas Geraes. Oct. 1840.

28. Stereum *cyathiforme, Fr. Ep p.* 545.

Natividade Prov. of Goyaz. Jan. 1840.

29. S. *nitidulum*, n. s. pileo infundibuliformi submembra-

naceo rigidiusculo crenato glabro nitidulo zonato brunneolo; stipite centrali tenui; hymenio albo.

On a rotten stick covered with sand, on the bank of Rio de Mauvel Alvez. Prov. of Goyaz. Oct. 1839.

Pileus about half an inch broad, infundibuliform, thin, submembranaceous, but rather rigid, brownish, with a tinge of red, marked with darker zones, smooth, shining.

Stem $\frac{1}{4}$-$1\frac{1}{2}$ inch long, about 1 line thick. Hymenium, covering part only of the under surface, white.

30. Dictyonema *sericeum, Mont.* (*sub* Dichonemate, *in Bel. Voy. p.* 155.) Thelephora sericea, *Swartz!*

Organ mountains.

The specimens are in a high state of fructification, being covered, on the under side, with an ochraceous, much cracked hymenium, exactly like that of a Stereum. Precisely the same hymenium exists in *Dictyonema excentricum*, of which I have seen an authentic specimen, and which does not differ generically from *Dichonema*. The genus will come next to *Cora*, whose hymenium is similarly formed. *Dichonema æruginosum*, Nees v. Es. is apparently the same species. The margin is pale, in consequence of the *Calothrix* or *Scytonema* which accompanies it, not having grown so fast as the matrix.

31. Nidularia *plicata, Fr. in Linnæá, vol.* 5, *p.* 553.

On a dry bank. Organ mountains.

32. Sphæria *Hypoxylon, Ehr.*

Var. mucronata.

On the stem of an old tree. Arrayas, Prov. of Goyaz April 1841.

This variety has the form of *Sph. escharoides*, Berk., and appears to be, as nearly as possible, the same with what Schweinitz has figured under the name of S. *mucronata* in Journ. Ac. Nat. Sc.: Phil. vol. v. 1825. p. 5. tab. 1. fig. 1.

The stem is slender, $\frac{1}{4}$ to $\frac{1}{3}$ of an inch long. Head $\frac{1}{8}$-$\frac{1}{4}$ of an inch long, 1 line thick, cylindrical, in general tipped with a short acute mucro.

33. Geaster *fimbriatus, Fr. Syst. Myc. vol.* 3, *p.* 16.

Rio Janeiro. A single specimen only.

34. Hippoperdon *crucibulum, Mont. Ann. d. Sc. Nat. Feb.* 1842.

Minas Geraes.

Of this species there are specimens in Sir W. J. Hooker's collection from New Orleans, and it was gathered by Gaudichaud in his last voyage.

35. Antennaria *pannosa,* n. s. thallo pannoso expanso; floccis erectis rigidiusculis primum moniliformibus, dein cylindricis, ramosis; ramulis attenuatis subalternatis.

On the leaves of a species of *Pogopetalum.* Chapada de N. S. d'Abadia, Prov. Goyaz. May 1840.

Hypo-and Epiphyllous; investing the leaves and stems with cloth-like black patches, consisting of erect branched flocci, which in the looser parts are distinguishable by the naked eye. Main branches, very irregular, often forming a right angle with the stem; ultimate ramuli more or less alternate, consisting of cylindrical, or but slightly swollen articulation from 1·3 times as long as broad. At the base are found a few moniliform threads, which have evidently sprung from capsules, but I have not been able to find the capsules themselves in a perfect state. There are also other more slender anastomosing filaments, which are apparently a sort of Mycelium.

The species is distinguished from the other described Epiphytous species, by its larger size, and equal articulations. It would probably, in the absence of perfect capsules, be referred by Corda to *Campsotrichum,* some of the species of which genus are probably true *Antennariæ.* The genus, though at first proposed by Link, in Schrader's Neues Journal, on very insufficient characters, founded upon an erroneous analysis, was well and accurately described by him in his continuation of Willdenow's Species Plantarum, whence, and from Greville's analysis of *Racodium cellare,* Fries has taken his characters. It is strange, therefore, that Corda should have given such a very insufficient illustration of the genus, if indeed, the two species figured by him, really belong to it. The characters are beautifully exhibited in a species from Juan Fernandez, noticed in Flora Fernandesiana as a form of *Cladosporium Fu-*

mago, with the symbol var? *Elongatum*, Mont. Dr. Montagne, is now however, satisfied that it is not only distinct, but that it belongs to the genus *Antennaria*, as characterised by Link and Fries, and as there is no satisfactory analysis, he has kindly transmitted sketches and specimens, with a view to the publication of the species under the name of *Antennaria Robinsonii*, Mont. and Berk., together with *Antennaria pannosa*, of which it has very much the habit, but the filaments are far more slender, and some of the articulations are moniliform, while in perfect specimens of *A. pannosa* all are cylindrical, or nearly so. I have little doubt that the capsules in *A. pannosa* are at first lateral, but I have not seen this with sufficient precision to allow of my giving a representation. The characters of *Ant. Robinsonii* then, will stand as follows:—thallo pannoso expanso; fibris tenuissimis elongatis ramosis; articulis æqualibus moniliformibusve; sporis lateralibus.

It is not necessary to compare the fructifying fibres with *Pleuropyxis*, which they greatly resemble in general habit, but the contents of the capsule in that genus are quite different.

Tab. XXIV. Fig. 1.

a. portion of *Antennaria pannosa*, slightly *magnified*, showing the perfect erect branched fibres, and the more procumbent young moniliform fibres at their base.

b. portions of the fibres, moniliform threads, and anastomosing mycelium, highly magnified.

Tab. XXIV. Fig. 2.

a. portion of *Antennaria Robinsonii*, highly *magnified*, showing the usual state of the fibres, and one in which all the upper articulations are moniliform.

b. ramuli with peridia, which are mostly lateral, but often arise from a swollen articulation.

c. evolution of a spore.

d. ditto, less magnified; in this case, the contents of the spore form a lobed gelatinous mass, which, with the inclosed branched colourless threads, resembles very much a *Chætophora.*

e. threads from a germinating spore, showing the inarticulate slender threads of the centre, and the dichotomous moniliform threads which arise from them. These gradually increase in size, acquire a brown colour, and at length assume the characters of the perfect plant.

f. a portion, less regular, very highly *magnified.*

g. a spore, giving out threads from the cells of the peridium.

h. a portion of the same, more highly *magnified.*

36. Pterula *plumosa,* Fr. Clavaria plumosa *Schwein. n.* 1089.

Clay banks near Maranham. June 1841.

The specimens, compared with one from Schweinitz, present but little difference. They differ, indeed, more from the technical characters, as given by Fries and Schweinitz, having the ultimate ramuli, for the most part, simply elongated, but amongst them are some which are dilated above, and almost plumose. In the greater number of individuals from a compressed stem, arise a large quantity of branches, disposed, in well grown specimens, in a palmate manner, with the ultimate ramuli half as high as the whole plant, and extremely acute. Some crowded individuals show little of the palmate arrangement. Tufts about 1 inch high.

37. Stilbum *lateritium, Berk. in Ann. of Nat. Hist. vol* 4, *p.* 291, *tab.* 8.

On sticks. Maranham. June 1841.

The specimens are not so inclined to become fasciculate as those procured by Mr. Darwin.

38. S. *stromaticum,* n. s. gregarium ε stromate nigro inæquali; stipitibus compressis striatulis nigris; capitulis aureis globosis; sporis minutissimis subglobosis.

On a rotten tree, with *Ag. ferruginus* and *mitiusculus.* Minas Geraes.

Forming effused patches on the bark, springing from a black, smooth, undulated stroma, which has exactly the structure of a *Sclerotium*, consisting of angular cells, each of which contains a nucleus, those of the cuticle being darker and smaller. Stems distinct, 1½-3 lines high, ⅛ of an inch thick, compressed, black, consisting of very fine fibres, externally slightly striate, surmounted by a yellow globule, which is coated with very numerous extreme minute subglobose spores.

I know of no species very nearly allied to this. It resembles most, perhaps, *S. clavulatum*, Mont., but differs in many respects. It is certainly one of the most striking of the genus.

39. Cladosporium *herbarum, Lk.*

On *Lenzites applanata*. Minas Geraes. Oct. 1840.

[This is not to be considered as at all a perfect list of Fungi observed by Mr. Gardner, who informs me that if he had had time, he could have collected, at least, ten times the number.]

BOTANICAL NOTES, *made in the Republic of* EL ECUADOR, (*Quito, Guayaquil, and Asuay*), *by* WILLIAM JAMESON,* ESQ., *late Professor of Natural History and Botany, in the University of Quito.*

RANUNCULACEÆ.

Ranunculus Peruvianus (*No.* 1) is found on the elevated pasture grounds of the Andes, between 12,000 and 13,000 feet; *R. Guzmanni,* (*No.* 2) at, or near the snow limit. The former has rather an extensive range, (from Cerro de Pasco, in

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* This talented gentleman, who, during his long residence in Columbia, has largely contributed to our Herbarium and to the pages of this Journal, has at length been persuaded by us, to transmit a dozen sets of the plants of these interesting regions, which have been collected and numbered, and which will be offered for sale, at £2 the 100 species.

Peru, to the Equator) but, with us at least, it must be considered of rare occurrence. I am acquainted with only three localities: "El Corazon," where it was originally discovered by Guzman; "Cerro del Altar," in the Province of Riobamba, where it was found by the late Col. Hall; and Mount Cayambe, under the equinoctial line, 14,217 feet, where I first saw it in August 1828. *No.* 3, is as common with us as *R. acris* is in Great Britain; and, like it, gives a yellow tint to the verdant pastures of Quito and Machachi.

Of the genus *Thalictrum, No.* 5 is the only species we have. It is circumscribed within 9,000 and 11,000 feet of elevation.

The *Anemone* (sent in a former collection) I have nowhere seen, excepting on the metalliferous veins of Pillzhum, and even there it is by no means plentiful.

The genus *Hamadryas* does not appear to advance to the northward of the transverse mountain ridge, denominated the Paramo of Asuay, forming the boundary between the provinces of Riobamba and Cuenca. On either side of this mighty barrier, there is not the slightest modification of soil or climate; and although very many plants are common to both provinces, there are, nevertheless, a few peculiar to each, of which *Hamadryas Andicola* offers an example. In my remarks on other tribes I shall again advert to this subject.

Of *Clematis,* there appears to be one species only, *C. sericea,* (*No.* 307), of common occurrence about the suburbs of Quito.

LEGUMINOSÆ.

The *Leguminosæ* abound on the low lands near the coast, where they frequently assume the appearance of majestic forest trees and lofty climbers. On the table lands of the Andes they are even fewer than in the temperate countries of Europe. Some of the genera are common to both hemispheres; as, for instance, the genus *Lathyrus,* of which we have here two or three species. The *Psoralea* is a native of the central zone of shrubs, and its dried leaf is sometimes employed as a substitute for tea. One of the most abundant plants is the *Dalea?* (*No.* 7), with blue flowers, universally found in the temperate regions of the Andes, between the limit of 8,000 and 11,000 feet. The Lupine, of which there are many species, flourishes on the more elevated plains, 13,000—15,500 feet; its seeds, though disagreeably bitter, are used by the Indians as an article of food. *Lupinus*—(*No.* 9), is one of the most diminutive, and occurs near the snow limit. But the most remarkable of the whole group is a gigantic species from Pichincha and Antisana, near the summit of these mountains, where its peculiar appearance cannot fail to attract the attention of the most careless observer. A floral spike, about thirty inches high, and hollow in the centre, springs from the ground, bearing numerous sessile blossoms, enveloped in a substance resembling silk. Its diameter is about four inches; and, in shape, it very much resembles a club. The leaves are all of them radical, deeply divided, and supported on long silky footstalks. The entire plant is too bulky for the herbarium.

All the Lupines I have hitherto found in this country have blue flowers.

On the dry and parched savannahs of the coast, and distributed in clumps or patches, are many arborescent *Mimosæ;* more abundant as we recede from the base of the Andes, which can only be accounted for by the superior dryness of the climate. Near the coast the wet season scarcely lasts three months; but it sometimes, though rarely, happens, that little or no rain falls for two, or even three years. A complete failure of the more tender gramineous plants is the consequence; and the numerous herds of cattle, reared on the plains, have then no other means of subsistence than the tender shoots and foliage of the *Mimosæ*, which are greedily devoured. As might be expected, many of the animals perish; but the mortality, I believe, to be occasioned rather by the scantiness, than by any noxious quality possessed by this species of fodder, the lower branches being alone accessible.

In the deep and hot vallies of the Andes, 6000—7000 feet, where the *Cacteæ* derive their nourishment more from the air than from the soil, the *Mimosæ* assume the appearance of shrubs or diminutive trees. I recollect, many years ago, while travelling in the Province of Loxa, finding a shrubby *Mimosa*, remarkable for the beauty of its flowers, resembling a tissue of crimson silk. Two of the species advance nearly to the level of Quito. *Mimosa*—(*No.* 12), with rose-coloured flowers, grows on the banks of the river Machangara, not 200 feet below the level of the city. It is associated with a fragrant white-flowered species, more abundant, however, on the plains of San Antonio, a small village situated directly under the equator, and elevated 8,500 feet above the level of the sea.

All the European *Leguminosæ* used as articles of food, are successfully cultivated in the temperate regions of the Andes.

GENTIANEÆ.

These, as in Europe, are peculiar to the more elevated lands, with the exception of *Erythræa Quitensis,* which, if I mistake not, grows also on the alluvial country of Guayaquil. On emerging from the forest that extends from "Camino real," (7,852 feet) downward to the flat country on a level with the coast, *Gentiana*—(*No.* 15), is the first of the tribe that presents itself. Its superior limit is 12,000 feet, or just beyond the point where the *Cerealia* cease to be cultivated. At 9,000 feet we meet with the diminutive *G. sedifolia,* (*No.* 20), with a corolla of pale blue or white, and dotted in the centre. I believe that it is universally found on the Andes, for many degrees north and south of the Equator. Its range on the flanks of these mountains is from the elevation just stated, to the highest limit of vegetable life; but in the latter station, there is a remarkable difference of the corolla, both in size and colour. It also possesses, in a striking manner, the property of instantly closing its blossoms on being slightly touched by the finger; and so completely is this effected, that one hardly recognizes the same plant which, a few moments before, was expanding its deep azure flowers to the sun's rays. It is a curious circumstance, that cold, or probably some other cause connected with atmospheric rarefaction, should, in this instance, excite vegetable irritability. The reverse happens with respect to the *Mimosæ*, many of which are natives of the temperate mountain region; yet none of these contract their leaves on being touched; while other species of the same family, abundantly distributed on the sultry savannah that borders the coast, manifest that property in a very remarkable degree.

Leaving the village of Guaranda, (9,060), we immediately commence the ascent of Chimborazo, over which lies the main road to Quito. *Gentiana cernua*, (*No.* 17), presents itself about half way up, and to an admirer of Alpine vegetation, and more particularly of the elegant and important tribe under consideration, it must prove a valuable acquisition. Its flowers are numerous, of a bright scarlet, and very large in proportion to the size of the plant. It reaches to nearly the termination of the ascent. There, we also meet with a middling-sized tree, certainly one of the hardiest, since it thrives best on the elevated rocky passes of the Andes, where, every night, vegetable life is subjected to a freezing temperature: I have seen it on the western declivities of these mountains, as high as 14,000 feet; I allude to *Polylepis lanuginosa.* The epidermis hangs in tatters from its cinnamon-coloured trunk, often rent by fissures, as if it had been blighted by the elements; and its pinnated foliage, of a sombre green hue, is very different from those brilliant tints that enliven the forests of the low country.

The highest point of the road is the "arenal" elevation, 14,049 feet above the coast. The snowy summit of the mountain lies on the left hand side, and assuming the measurement of Humboldt, it ought to be 7,365 feet above this point. One would suppose it to be much lower, but an uninterrupted mass of snow, where scarcely any object intervenes to relieve the eye, has the effect of ostensibly diminishing distance. I, many years ago, found this to be the case, on visiting, for the first time, the coast of Greenland, where both sea and land lie concealed beneath a bare expanse of ice and snow.

Having crossed the southern flank of Chimborazo, and arrived at the little village of Mocha, a distance of about fourteen leagues, we enter a wide valley, of which the two main ridges of the Cordillera constitute the boundary. Towards the north, and on the road to Quito, are situated the villages of Ambato, Latacunga, and Mulalò, all of which have, at different periods, suffered from the volcanic eruptions of Tunguragua and Cotopaxi; a circumstance which has also contributed to impart to the whole valley a rather barren and desolate appearance. A continuance of several months' drought usually destroys every trace of vegetation, excepting such plants as extract nourishment from the succulent American Aloe, which, by the bye, thrives exceedingly well on these sandy plains; as also a few species of the genus *Cactus.* I have observed two varieties of the *Agave,* distinguished by the colour of their foliage; the one being of the usual glaucous tint, and the other a bright green. The latter I have seen in the hot country near the sea-coast, but neither will grow at an elevation that exceeds 10,000 feet. Of trees, the Capuli (*Prunus salicifolia*) attains a large size; and on the road from Ambato to Latacunga, (8,800 feet) we meet with *Schinus Molle,* the trunk of which exudes a species of resin. A few bushes of *Baccharis Chilca, Dodonæa viscosa,* (*No.* 273), and extensive patches of *Arundo nitida,* make up the rest of the vegetation. The cultivated plants consist of Indian corn, barley, pease, quinoa, and lucerne, hedged in by fences of *Agave.* The length of the valley, from Riobamba to Callo, is about twenty-eight leagues, its average breadth ten, and its elevation above the sea 8,800—10,000 feet.

Above the farm of Callo, the two chains of the Andes are united by a transverse ridge, known by the name of the Paramo of Tiopullo, or Knot of Chisinche. Its elevation is scarcely 2,000 feet above the plain of Callo to the south, and that of Machachi towards the north. On the right hand side the view is bounded by Cotopaxi, of which the plain of Callo forms the base, and the rocky and precipitous summits of Ruminavi, occasionally sprinkled with snow. On the left is Eliniza, with its two snowy peaks. The intervening space is scarcely a league in breadth. The top of the "paramo," nearly level, is clothed with a short grassy turf, enamelled with the purple flowers of a pretty *Gentian*, (*No.* 18), and the white *Hypochæris sessiliflora.* The inferior limit of the *Gentian* is 11,000 feet; but it is one of the few blossoms that adorn the barren soil of Cotopaxi, reaching very nearly to the snow boundary.

No other species occurs on this line of road, excepting the insignificant *G. limoselloides*, (*No.* 14), growing on the boggy meadows of Machachi. *Gentiana*, (*No.* 16) scarcely ever occurs below the level of 15,000 feet, and is common to most of the Andes. *G. Jamesoni*, (*No.* 13), has only one locality that I know; that of Pichân, on the western side of Pichincha, 12,500 feet.

The *Swertia* (*No.* 21), occurs on all the Andes, betwixt the level of 12,000 and 14,000 feet.

The flowers of the *Gentians* exhibit in this country almost every variety of colour—red, blue, purple, yellow, and white. Of sixteen species with which I am acquainted, one half are red, four purple, two blue, one yellow, and one white. In Europe, I believe, blue is the colour that predominates.

SCROPHULARINÆ.

The table-land on which Quito is situated, presents many features of similarity to the northern countries of Europe. The city is constructed on a narrow neck of land, on what may be termed a ledge of Pichincha; but the country towards the north and south widens into an extensive plain, clothed with a short grassy turf, and is similar in every respect to those tracts of land, called in England "downs." So much do the gramineous plants resemble ours, that no one but a botanist could pronounce them specifically distinct. We again recognize the genera *Poa, Festuca, Bromus,* and *Alopecurus,* so very important as affording food for cattle. On spots that have been subjected to cultivation, we even find *Sinapis arvensis, Thlaspi Bursa-Pastoris, Stellaria media,* and *Anagallis cærulea;* plants that must have been originally introduced with European Cerealia. But we nowhere observe the red poppy and blue bugloss, by us, it is true, regarded as weeds, though certainly very pretty and ornamental. The red poppy (*Papaver Rhæas*) is so highly esteemed by the Spanish Americans, as to be cultivated in parterres, and even in pots; while many handsome native flowers that would excite the admiration of the European horticulturist, are held in no estimation whatever.

Such are the *Calceolariæ,* of which the vicinity of Quito affords a very great variety. The ravines that furrow the sides of Pichincha produce *Calceolaria lavandulæfolia* (*No.* 26) one of the handsomest of the tribe, and *C. floribunda* (*No.* 28). The former does not prosper below the level of 10,000 feet, while the latter reaches the valley of Chillo, about 2,000 feet lower down. C. *lavandulæfolia* grows plentifully on the plain to the south of Quito, where the mean annual temperature is 1° below that of the city. Pursuing the same direction, we find it on the grassy plain of Machachi, near the northern acclivity of Tiopullo. We again meet with it at the base of Chimborazo, near the village of Mocha, and it finally disappears on the northern slope of the Paramo of Asuay. The province of Loxa, which borders on the Peruvian territory, scarcely produces a single individual belonging to this genus.

Eight thousand feet may be considered as the lowest limit of the *Calceolariæ*, although I, many years ago, recollect gathering *C. pinnata* in the ditches of Callao, on the coast of Peru; but then we have a difference of 12° of latitude. In this country, however, they scarcely occur below the limit just cited. *C. ericoides* (*No.* 25), grows at 13,000 feet, and *C.*—(*No.* 27), still higher. A third species is peculiar to the rocky summit of Pichincha.

Columellia sericea (*No.* 22), and *Buddleia*—(*No.* 23), are among the first of the forest trees that occur on descending the western flank of Pichincha. Their flowers, as well as foliage, are very beautiful, and they are, moreover, quite hardy trees; for they thrive admirably on the heights of Pichàn, 12,986 feet above the level of the Pacific. They would prove eminently ornamental, could they be introduced into our parks in England.

ONAGRARIEÆ.

In a country like equinoctial America, where nature adorns the animal and vegetable kingdoms with colours the most brilliant, it might be supposed that certain plants, whose type is common to both hemispheres, would, within the tropics, excel in beauty those of the same family that are natives of Europe. We find, however, that this does not always occur. Were it possible to bring under one point of view the whole species of a family so constituted, I am convinced that, in many instances, we should select, as the more ornamental, those that belonged to the old continent.

This remark was suggested on gathering a little *Epilobium*, (No. 283), a native of the Andes, and comparing it, from memory, with those of the same family in Europe. The S. American plant, of which there is but one species, might be readily overlooked, so very insignificant does it appear, and were it placed by the side of our *E. angustifolium*, the comparison would be exceedingly to the disadvantage of the former. I might apply the same observation to the *Ranunculaceæ*, comparatively few in genera as well as in species—

Veronica, a representative of the present Order,—*Saxifraga, Viola, Campanula,* and the most esteemed plants of the *Rosaceæ.* We cannot explain the anomaly; but why are not the genera *Veronica* and *Epilobium* reproduced here, in the same proportion as in Britain and New Zealand, countries situated at the greatest possible distance from each other?

We have, however, one group of plants, chiefly S. American, for beauty, perhaps unrivalled. The *Fuchsiæ,* so much coveted by collectors, are natives of the wooded ravines of the Cordillera, vegetating on the banks of streams, or in localities where the air is saturated with moisture. They are never seen in a climate that favours the growth of *Cacteæ. Fuchsia triphylla* grows on the western, or what is the same thing, on the wooded side of Pichincha, at 13,000 feet of elevation, where the air is so moist, as generally to assume the appearance of a drizzling rain, or mist. It there displays flowers, remarkable for their size, and of the brightest scarlet colour. The same plant occurs at Tambillo, near Quito, (10,000 feet), where, although it very frequently rains, the air is generally transparent. But the flowers are smaller, as may be seen by comparing the specimens from both localities. *Fuchsia dependens* (No. 83), requires a somewhat milder climate, and abounds in the valley of Noño, at about 8,500 feet of elevation. *Fuchsia* (No. 32), is from the valley of Lloa.

I recollect, many years ago, gathering in the province of Alausi an aphyllous *Fuchsia,* with remarkably fine flowers.

CRUCIFERÆ AND UMBELLIFERÆ.

We are tolerably well acquainted with the geographical distribution of the *Cruciferæ.* They abound most in the cold and temperate countries of both hemispheres. I have not hitherto found a single representative of the Order on the shores of equinoctial America; but on the cold and elevated plains of the Andes they are associated with those vegetable forms with which we are familiar in Europe. The genera, too, are nearly the same. *Sisymbrium*, (*No.* 301), called *berros* by the Creoles, is similar, in every respect, to our water-cresses, and is held in repute as an antiscorbutic. *Cremolobus Peruvianus* (*No.* 85), is a large shrub, found on the middle region of Pichincha, chiefly towards the western side. But of all the plants belonging to this Order, the *Drabæ* must be allowed to hold the first rank. In Europe, one would hardly think it worth while to cultivate the continental *Drabæ*, so little attractive are they; whereas, on the Andes, we have several species that attain the dignity of shrubs, adorned with large flowers, purple or white. Of this description is *Draba violacea* (*No.* 83.) It is a very elegant shrub, with deep purple flowers and downy foliage, being peculiar to the lofty ridges of the Andes, to the southward of the Asuay, where it is often associated with the no less elegant *Altsrœmeria glaucescens*. *Draba grandiflora?* (*No.* 84), adorns the bare rocky precipices of Chimborazo. It can scarcely be called a shrub, but is remarkable for its large snowy blossoms. *Draba alyssoides* (*No.* 82), first occurs at an elevation of 12,000 feet, and reaches to the snow limit. Of all the species it is the most generally distributed. *Draba aretioides* (*No.* 78) is found near the summit of Pichincha, where the ground is frequently sprinkled with snow, growing on the sand, in the shape of a compact vegetable mass. It is associated with *Sida Pichinchensis*, (*No.* 105), and the *Culcitia*, (*No.* 228, 229, 230, 231). *Draba*—(*No.* 81), occurs only on the Cerro del Altar, near the mine of Condorasto, at an elevation of 14,496 feet.

The collection contains altogether seven species of this interesting genus, whereas three only are described by Kunth as natives of this country.

The same observations as to geographical position will apply to the *Umbelliferæ*. They are not, however, so much restricted as to climate, and consequently occupy a wider range on the flanks of the Andes. *Hydrocotyle*—(*No.* 116), extends a long way down, amid the dense and misty forests that overhang the Pacific; although most of the species prefer the boggy meadows of the inhabitated table lands. *No.* 281 and 282 are from the pasture grounds of Quito. All the species, however, seem to be limited by the central zone of shrubs, (13,000 feet). Beyond these, where the region of grasses, or "pajonal" commences, they are succeeded by *Ottoa œnanthoides*, (*No.* 119), a plant remarkable for the structure of its leaves, resembling in shape those of the common onion, but divided into distinct transverse cells. It inhabits the rocky soil of Pichincha, where vegetation is otherwise scanty. I have not been on the spot cited by Humboldt, where it is said to grow at the moderate elevation of 1,200 toises (vide *Syn. Pl.* v. 3, p. 101); whereas I have invariably found it beyond the limit of cultivation. Between 10,000 and 14,000 feet of elevation we have *Fragosa aretioides*, adhering to the rocks in large patches of a bright green, resembling, in the form and arrangement of its leaves, some of our alpine *Saxifrages*. Near the summit of Pichincha we meet with an *Apium*, (*No.* 120), smelling exactly like celery. Another species, hardly distinct, is found on the Cotopaxi. There are specimens of both in the collection.

The most important plant belonging to this tribe is the "*Aracacha*" or "*Zahanoria*," (a species of *Apium*) cultivated for the use of the table. The roots are about the thickness of a carrot, and when boiled are not at all unpalatable.

ERICEÆ AND VACCINIEÆ.

I have mentioned elsewhere, that the superior limit of the *Cerealia* is succeeded by a zone of shrubs and small trees, with shining coriaceous leaves, many of which represent the two allied Orders of *Ericeæ* and *Vaccinieæ*. The first of these is almost wholly comprehended in the single genus, *Gaultheria*, none of which, however, vegetate below the level of 9,000, nor transcend that of 13,000 feet. Neither do they, like the North American *Andromedæ*, grow in peat bogs or morasses; but, on the contrary, they are all natives of a dry soil, and some of them even penetrate the crevices of rocks.

Some particular localities seem remarkably well suited for the development of these plants; nor do I any where recollect seeing so rich an assemblage of them as on the Paramo of Saraguro, bordering on the Province of Loxa. It was on this interesting spot, the soil of which is a dark ferruginous clay, that I found the very curious and rare *Gaultheria lanigera*, associated with some of the choicest productions of the vegetable kingdom, and which no garden can produce. I allude particularly to those elegant shrubby *Befariæ*, profusely distributed over the flat table land, and diffusing, far and wide, a glow of the richest purple; intermingled with copses of *Thibaudias* and *Vacciniums*, on which hangs the *Eccremocarpus longiflorus* (*No.* 186), supported by its long tendrils. I did not observe any *Gentians*, which I suppose to be owing to the moderate elevation of the paramo, scarcely 10,000 feet above the coast.

The *Thibaudiæ* occur principally on the forest-crowned mountain ridges that flank the western Andes, from 7,800 to 10,000 feet above the Pacific. There is one species, particularly fine, distinguished by its large fleshy tubular flowers, of the purest white, tipt with crimson. *Thibaudia acuminata* (*No.* 166), grows on the table land of Quito.

I subjoin a list of shrubs, which will serve to illustrate the general features of the vegetation of the Andes, immediately above the limit of the cultivated lands. The eastern chain, on the side facing the intermediate inhabited valley, presents a zone of shrubs in every respect similar.

Hypericum laricifolium	No. 133	Rhexia . .	No.
Barnadesia spinosa . .	205	Melastoma . .	309
		Berberis . . .	181
Lobelia		——— . .	182
Fuchsia triphylla . .	31	Buddleia . . .	23
Thibaudia acuminata . .	166	——— . .	24
Escallonia myrtilloides .		Baccharis odorata .	244
Osteomeles ferruginea .	154	——— . .	210
Mespilus	153	Composita . .	236
Citharoxylon ilicifolium .	178	Ribes . . .	158
Eupatorium glutinosum .	216	Psoralea . . .	

Valeriana	132	Loranthus . .	163
Gaultheria . . .	161	Vaccinium . .	165
———tomentosa . .	162	Rubus glabratus .	311
Loranthus . . .			

A few of these ligneous plants, such as *Hypericum laricifolium*, *Baccharis odorata*, and the *Composita* marked (*No.* 236), ascend as high as 13,000 feet, intermingled with a long, hard, wiry-leaved grass, which very soon monopolizes the whole surface, to the exclusion of every other vegetable, excepting, perhaps, *Valeriana rigida*, *Swertia umbellata*, *Vernonia nubigena*, and the common wild thyme of the country, (*No.* 142), *Thymus nubigenus.* The practice of setting fire to the " paramos," as they are called, is perhaps one reason why no shrubs are found on this region. On the eastern chain of the Andes, the domain of the grassy plants is very extensive, and thousands of cattle are reared at an elevation of from 13,000 to 15,000 feet above the coast.

The transverse ridge of Asuay, over which is traced the main road to Cuenca, is a desolate and dreary waste of country, clothed with this hay-coloured grass, waving about in the breeze; not a single habitation being visible throughout a long day's journey. The weather, too, is subject to sudden vicissitudes; from bright sunshine to sudden fogs; and, not unfrequently, showers of hail or sleet, accompanied by violent thunderstorms.

At 15,000—15,500 feet we enter the region of the Alpine plants, properly so called; comprising the *Gentianæ*, the *Culcitia*, the *Valerianæ*, the *Drabæ*, &c. The few shrubs peculiar to this region have generally a twisted knotty stem, producing a tuft of leaves and flowers at the extremity of each branch. Of this description are *Aster rupestris* (*No.* 233), and *Ribes frigidum*, (*No.* 160). *Chuquiraga insignis*, a compound shrub, found universally near the summit of the Andes, has remarkably stiff horny leaves. A few *Caryophylleæ*, (*Cerastium* and *Arenaria*), *Leguminosæ*, (*Lupinus* and *Astragalus*,) and *Geraniaceæ*, (*Geranium*,) make up the rest of the vegetation of these lofty regions.

On all the snowy mountains the genera are essentially the same. The species, however, are somewhat diversified. One mountain, for instance, produces a peculiar species of *Gentiana ;* another a *Draba ;* while a third plant is common to two distinct snowy summits. But what appears still more remarkable is, that certain Ferns, whose light powdery seeds are so easily transported by the winds, should be restricted to certain localities.

The *Jamesonia* is found in the greatest abundance on the grassy region of Cayambe, Condorasto, and the mountains of Cuenca ; but I believe it might be sought for in vain on Chimborazo, Cotopaxi, and Pichincha. *Gleichenia simplex, Cryptogramma retrofracta* (*No.* 59), *Gymnogramma flabellata* (*No.* 63), and *Gymnogramma elongata,* all very abundant on the mountains of Cuenca, do not at all occur on those of Riobamba and Quito, the ridge of Asuay forming the line of separation.

On all the "nevados," the line of perpetual congelation may be placed nearly under the same parallel of altitude ; as the following table, founded on barometrical measurements, will sufficiently demonstrate ; the results varying, however, with the season of the year, the limit being generally higher during the time of the vernal equinox.

Cotopaxi (Dec.)	15,646 feet.
Chimborazo, (March)	16,000
Antisana, (Oct.)	15,838
Pichincha, summit of	15,676
(Very frequently without snow).	
Cayambe, (June)	14,217
Condorasto (Jan.)	15,600

The western side of Pichincha, fronting the Pacific, is frequently obscured by dense fogs, sweeping across the face of the paramo, occasioned by ascending aerial currents, charged with moisture, intermingling with the cool mountain atmosphere ; while that of the table land of Quito, unless when disturbed by the transient effect of a thunderstorm, is remarkably dry and transparent. This may be one reason why no trees are found on the plain of Quito, excepting such as have been planted round the "haciendas." At Pichàn, 12,986 feet, where the western descent commences, we have, instead of shrubs, large forest trees clothing the precipiçe to the height of nearly 14,000 feet, associated with a few Alpine forms, as *Lychnis* (*No.* 115), *Cerastium* (*No.* (108), a gigantic *Draba* (*No.* 77), and a stinging *Loasa*, with a flower of the colour and size of an orange. From this point, down to the level of about 8,000 feet, the forests frequently break into clumps or patches with vacant spaces of soft green pasture, very much resembling English park scenery.

Nothing can exceed the richness and variety of the Flora of this region. The gorges, or wooded defiles, are resplendent with *Fuchsias*, *Thibaudias*, and *Begonias*, entwined with *Tacsonias* and *Alstrœmerias*; nor can I conceive any thing finer than the curious genus *Loranthus*, vegetating on the large forest trees, and displaying aloft a profusion of splendid blossoms. One species, in particular, produces a large cluster of pendant flowers, each measuring about ten inches in length, and resembling the finest coral. From their peculiar mode of growth, none of these shrubs have been hitherto introduced in a living state, and consequently no idea can be formed of their extreme beauty from the mere inspection of a dried specimen.

Amid the multitude of fine flowers that embellish these tropical forests, those of the *Orchideæ* deserve particular notice. Perhaps no class of plants displays so much diversity in the construction of the corolla, while the whole group is at once distinguished, as constituting an extremely natural assemblage. The resemblance which some of the flowers bear to certain animals has not escaped the observation of these people, little inclined as they are to investigate the natural productions of their magnificent country. The fine genus *Anguloa*, a native of the province of Loxa, produces a flower which, from some fancied resemblance to a bull's head, has received the name of "el Torito." *Cyrtochilum pardinum* is a native of the alpine forests of Cuenca and Loxa.

The cattle farm of Surucucho, verging on the paramo, over which is traced the main road to Naranjal, presents a greater number of the more minute species than any other locality with which I am acquainted. We have a description of these from the able pen of Professor Lindley; and though important for the advancement of botanical science, I doubt much whether they will be ever seen in a living state. The genus *Stelis*, of which there is a vast number of species, is less affected by cold than the generality of plants belonging to this tribe; some of them vegetating on the perpendicular cliffs of Pichincha, as high as 12,000 feet. On the western side of the Andes they accompany the forest-trees to a more considerable elevation.

Two zones seem particularly well suited for the production of *Orchideæ*. The first, and most extensive, is that just described, from 10,000 to 8,000 feet. The other is the forest land skirting the coast, and extending upwards to nearly 1,000 feet. In the alluvial country of Guayaquil there are many fine plants belonging to this family.

From the elevation of 6,000 feet downwards to within a few leagues of the coast, the country is a vast unbroken forest, forming overhead a dense leafy canopy, through which a transient sunbeam scarcely ever penetrates. The soil, perpetually deluged with rain, is strewed with leaves and timber in a state of decay, exhaling a peculiar vegetable odour, and, as in Choco, infested by venomous reptiles. Rare and beautiful *Cryptogamia* (*Trichomanes* and *Hymenophyllum*, Mosses, and *Jungermanniæ*) clothe with a mantle of lively green the trunks of these gigantic trees, forming a strange contrast with the naked soil underneath. There is, in fact, no space for the growth of herbaceous plants. The excessive moisture, with a perpetual diurnal twilight, are circumstances perhaps opposed to their development. They would be suffocated by the luxuriant vegetation of the forest. A few plants only of Vijao, (*Heliconia Bijai*) spring from the humid surface, and to the benighted traveller are of the most essential service, as forming a useful material to cover his temporary "rancho," the construction of which would be otherwise a matter of difficulty.

Nothing can be more impressive than the silence that reigns throughout these vast primæval forests. I have, on several occasions, traversed a space of thirty miles, in four successive days, without meeting with a single animated being—not even a bird. The traveller's progress is indeed remarkably slow; not so much owing to the miry state of the ground, as to the vast number of fallen trees he is compelled to climb over. At the same time he must be careful not to lose the path, the slightest deviation from which might be attended with serious consequences, in a country where it is hardly possible to procure a glimpse of the sun or stars. At night, he is frequently startled by the crash of falling trees, which may, perhaps, have existed for centuries, but are finally prostrated by the hand of time.

The coast of the Pacific can be reached by a path traced over the northern flank of Pichincha, impassable for mules, excepting the first day's journey; the remainder, of course, being performed on foot in the way I have just alluded to. The following stations, not indicated in the map, will show the elevation of the line of road with the approximate distance expressed in miles.

	Feet.	Miles.
Pichàn	12,986	.
La Sierra	8,909	20
Suruloma	8,154	9
Patacocha	5,131	9
Mindo	3,926	3
Bolaniguas	3,020	7
Cachaponga	2,728	9
Palogrande	1,208	7
Canigue	604	3

The rest of the journey is performed by water. At Canigue we embark on the Rio Esmeraldas in a light canoe, formed of a single trunk, and glide rapidly down the stream, so shallow for the first few miles, as scarcely to float the tiny craft. The depth of water is, however, soon increased by the influx of several tributary branches, and with scarcely any propelling effort we reach the mouth of the river in less than a single day—a distance of about sixty miles. The course of the stream is invariably downward, and under the most favourable circumstances it requires ten days to accomplish the ascent. Its banks are clothed with forest trees, occasionally varied with savannahs of luxuriant Guinea grass. From the rapidity of the voyage I did not enjoy the opportunity of examining this extremely fertile country.

(*to be continued.*)

Characters of Four new Species of ORCHIDEÆ *from Mr. Gardner's first Organ Mountain Collection. By* JOHN LINDLEY, Ph. D., F.R.S., &c.

Dear Sir William,—Dr. Lindley has just returned my Organ Mt. Orchideæ, which he kindly undertook to determine for the enumeration of my collections; but, not having leisure at present to continue it, I send you for publication the characters of four new species, which I find he has established. To these I add the distinctive character of a new *Cattleya* from the interior.

GEORGE GARDNER.

Hammersmith, Sept. 30, 1843.

EVELYNA BRASILIENSIS, *Lindl. MSS.*

Caule basi ad apicem foliato, foliis ovalibus acuminatis, capitulis basi foliosis subsessilibus.

HAB.—On trees in dense forests by the sides of streams, *n.* 642.

This is possibly the *Bletia capitata* of Brown. *Lindl.*

ONCIDIUM GARDNERI, *Lindl. MSS.*

Floribus paniculatis, sepalis oblongis obtusis lateralibus semi-connatis petalis duplo majoribus unguiculatis subrotundis undulatis, labello transverso emarginato basi auriculato, cristæ tuberculis duobus a fronte maximis intermedio minore duobus a latere linearibus binis alteris basilaribus circularibus verrucisque quibusdam in medio, columnæ alis nanis rotundatis.

HAB.—On trees in forests. *n.* 642.

This fine species, allied to *O. crispum* and *Forbesii,* is distinctly separated by the peculiar form and tuberculation of the lip, and by the very small wings of the column. The leaves and pseudo-bulbs are unknown. *Lindl.*

MICROSTYLES PUBESCENS, *Lindl. MSS.*

Caule diphyllo, foliis ovato-oblongis scapo nudo æqualibus, floribus dense corymbosis, labello subrotundo pubescente, petalis setaceis.

HAB.—On the moist stems of trees, in dense forests by the sides of streams. *n.* 674.

HABENARIA SARTOR, *Lindl. MSS.*

Foliis oblongis canaliculatis acutis, racemo multifloro, bracteis foliaceis ovario brevioribus, petalis bipartitis, laciniâ dorsali lineari rectâ anteriori setacea deflexâ longiore, labelli tripartiti laciniis setaceis intermediâ breviore, calcare pendulo clavato-compresso ovario multò longiore, sepalis lateralibus reflexis.

HAB.—In marshes. *n.* 676.

Near *H. macroceras,* but with a longer spur, a narrower and longer fore-arm of the petals, and longer and narrower stigmatic processes. *Lindl.*

CATTLEYA WALKERIANA, *Gard.*

Foliis oblongo-ellipticis coriaceis marginatis obtusis mucro-

natis caule cylindrico longioribus, sepalis oblongo-lanceolatis acutiusculis calloso-apiculatis, petalis ovato-lanceolatis acutis duplo latioribus, labelli trilobo cucullati lobis lateralibus apice valdè et oblique truncatis basi rotundatis, intermedio late rotundato emarginato edenticulato plano basi venis elevatis rugosis.

Cattleya Walkeriana, *Gardn. Herb. Fl. Bras. n.* 5200.

Hab.—On the stem of a tree overhanging a small stream which falls into the Rio San Francisco, beyond the Diamond district, Brazil.

The flowers of this very fine species measure about four inches in diameter. It is nearly related to *C. superba*, (Schomb. in. Lindl. Sert. Orchid. t. 22) but is readily distinguished by its much shorter pseudo-bulbs, and smaller leaves, by the larger and more rotund middle lobe of the labellum, but particularly by the obliquely truncated lateral lobes, which envelope only the lower half of the broadly winged column, and not the whole of it, as in *C. superba*.

The specific name will serve to commemorate the services of Mr. Edward Walker, who accompanied me as an assistant during the last two years of my travels in Brazil, and by whose activity and intelligence I was enabled to make many additions to my collections which might otherwise have escaped my notice, of which the present plant is an example.

Corrections and Remarks upon DRUMMOND'S *First* (*Arctic and Canadian*) *Collection of* NORTH AMERICAN MOSSES, *by* BRUCH *and* SCHIMPER.

These corrections, &c., to the first collection of Drummond's Mosses (in 2 vols. 4to.) were forwarded to me by Schimper a few weeks back, as the result of his and Bruch's examination of my collection of Drummond's Mosses, with the permission to send them to you for insertion in the "Journal," if I thought it advisable; and as it will serve as a "Concordance" between English and continental (German) nomenclature, I have no doubt that it will be acceptable to all who possess Drummond's collection. I have translated in almost every case the German text literally, to avoid making the authors say in English what they may not have intended to say in German.

R. J. SHUTTLEWORTH.

Berne, August 5, 1843.

N.B.—The numbers refer to the set in my possession. (*R. J. Shuttleworth*).

10. *Phascum serratum var. stolon. valde remotis*, is a young state of P. crispum, bearing the first fruit: the capsules are immature. It is extremely doubtful whether the accompanying Pseudocotyledones really belong to this species.

11. *Phascum crispum*. The specimen marked B is the true plant: that marked A is Phasc. cuspidatum, and the same form as No. 7.

12. *Gymnostomum phascoides*, is a Hymenostomum, differing from H. microstomum var. capsula subglobosa, only in its shorter stems, and in the perichætial leaves, which exceed in length the fruit-stalks. It may, therefore, be merely a variety of the last species.

13, 14, 15. *Gymnostomum Heimii var.* 1, 2, 3,—are forms which also occur in Europe.

16. *Gymnostomum latifolium*, is Ptychomitrium acuminatum, Bryol. Europ.—The leaves are only slightly broader, and more shortly acuminated.

22. *Gymnostomum pusillum*, differs in no character of importance from G. Donianum, the plants being smaller, and the capsules rather shorter than usual.

23. *Gymnostomum tortile*, is Gymn. rupestre var. tenellum. A perfectly similar form grows on the walls built of "Molupe," near Berne, and on the "Nagelfluh," near Munich.

30. *Anictangium imberbe Hook.*, is Hedwigia ciliata var. gracilis.

32, 33. *Splachnum rubrum et luteum*, are certainly distinct species. The specimens are intermixed with Spl. gracile Schwægr.

37. *Splachnum heterophyllum*, an extremely interesting new species. The peristome resembles that of Spl. mnioides, the leaves, inflorescence, and capsule those of Spl. sphæricum.

39. *Splachnum intermedium*, does not differ from S. sphæricum, No. 36.

43. *Splachnum arcticum*, offers no character of sufficient importance to distinguish it from Spl. mnioides, which last species appears under different forms, according to age and locality.

44. *Splachnum Frœlichianum*, is Systylium splachnoides Hornsch. only larger than ordinary.

46. = 44.

45. *Splachnum Frœlichianum var. elongatum*, is Eremodon splachnoides.

47. *Tayloria splachnoides*, a beautiful variety with narrower leaves.

48. *Eucalypta streptocarpa*, is Enc. procera, Bryol. Europ.

57. *Grimmia atrata, Hornsch. var. minor*, is G. unicolor Hook.

60. *Grimmia calyptrata*, nearly allied to G. leucophæa, but a well distinguished species.

61. *Grimmia Hookeri*, is Ptychomitrium pusillum, Bryol. Europ. (Weissia incurva Schwægr.)

64. *Weissia turbinata*, is certainly the same as Eremodon splachnoides.

66. *Weissia Seligeri*, appears to be only a variety of W. recurvata "foliis brevioribus, pedicello subarcuato."

68. *Weissia striata*, is W. Schisti, Brid.

70. *Weissia latifolia*; the specimens contain also the var. pilifera.

74. *Weissia macrocarpa*, is a Mielichofera, but the capsules are too old to allow the species to be determined.

75. *Pterogonium imbricatum Hedw.* is Pt. subcapillatum Hedw., and belongs to the genus Leptohymenium.

76. *Pterogonium imbricatum var. laxum,* differs in no essential point from No. 75.

77. *Pterogonium filiforme Hedw.* A is the true plant, B is Pt. repens.

80. *Dicranum scoparium.* A is Dicr. majus var. minor, foliis brevioribus: and B is Dicr. Schraderi var. foliis augustioribus subrugosis.

87. *Dicranum strictum Schwægr,* is D. flagellare Hedw.

84. *Dicranum Starkii var. majus,* is D. longirostre Schwægr.

86. *Dicranum undulatum var.,* is without any doubt a peculiar and distinct species: the capsules are, however, not in a sufficiently good state to permit of any decision with certainty.

92. *Dicranum elongatum var. .minus,* is D. strictum Schwægr.

97. *Dicranum Schreberianum,* is D. Grevilleanum Hook.

100. *Dicranum julaceum,* is a remarkable and beautiful species, belonging, however, to the genus Weissia.

102. *Dicranum Scottianum,* is D. montanum Hedw.

104. *Dicranum Richardi,* is the same variety of D. virens, which Bridel calls Oncophorus Wahlenbergii.

105. *Dicranum microcarpum,* is D. virens var. gracilescens, foliis angustioribus, capsulis minoribus, and strongly resembles Funk's D. virens var. compactum.

109. *Dicranum latifolium,* is Desmatodon latifolius var. *β*. glacialis.

114. *Didymodon oblongifolius,* is Desmatodon flavicans Bryol. Europ., and the same broad-leaved form which Schwæg. has described and figured (Suppl. I.) as Barbula obtusifolia. In the Alps this species is smaller.

115. *Didymodon latifolius,* is Desmatodon cernuus Bryol. Europ.

127. *Didymodon fragile nov. sp.,* appears to be a Trichostomum; the specimens are, however, too imperfect to enable us to determine either genus or species.

132. *Trichostomum fasciculare,* is a very different plant

from the true Racomitrium fasciculare, Brid., and belongs perhaps to Racom. Canadense, Brid.

137. *Tortula humilis,* is Desmatodon flavicans, and the same form which is distributed under No. 114, as Didymodon oblongifolius.

142. *Tortula tortuosa var. inclinata* (*Barbula inclinata Schwægr.*), is B. tortuosa var. compacta cæspitosa, foliis et capsulis brevioribus.

144. *Tortula subulata,* is Barbula mucronifolia Bryol. Europ.

145. *Tortula suberecta nov. sp.,* is Desmatodon obliquus Bryol. Europ. An extremely rare plant, for which only two European localities are recorded.

150. *Orthotrichum affine var. pumilum,* is O. strangulatum Schwægr.

149, 151. *Orthotrichum affine var. capsulis exsertis,* is more nearly related to O. patens: but differs, however, from this species remarkably in its smaller capsules, which are longer pedunculated, and in the rusty red-coloured teeth of the peristome:—it is without doubt a new species, for which we propose the name O. Canadense. No. 149 differs from 151 only in having longer stems.

154. *O. striatum Hedw.* appears to be O. fastigiatum. The capsules are, however, partly too old, partly too immature, for determination.

155. *O. elegans,* differs in no respect from O. speciosum Nees.

157. *O. obtusifolium,* belongs partly (and principally the fruited specimens) to O. Rogeri var. foliis acutiusculis, calyptra subpilosa.

159. *Neckera sericea Frol.,* is Anomodon (Pterogonium) repens.

160. *Neckera cladorhizaus.* A is rightly determined. B belongs, however, to N. seductrix (Anomodon).

162. *Neckera Menziesii.* A remarkable species, but the specimens are sterile.

163. *Neckera viticulosa.* The same variety which Hedw.

has figured as N. viticulosa var. minor: it is, however, a distinct species, to which we give the name of Anomodon obtusifolius.

164. *Hypnum denticulatum,* is Leskea pilifera Swartz,—a common species in Norway and Sweden.

168. *Hyphnum Silesianum,* is H. pulchellum.

174. *Hypnum lutescens,* is H. plumosum var. salebrosum, pedicello breviori, capsula minori.

176. *Hypnum populneum,* is H. pseudo-plumosum Brid.

183. *Hypnum strigosum,* the same form that Hedwig has described and figured as H. pulchellum.

184. *Hypnum stellatum,* differs from the true H. stellatum in its slenderer branches, in the leaves not being so rigidly patent, and chiefly in the monoecious inflorescence: it appears to be a good species.

188. *Hypnum serpens var. compactum.* Without doubt a Leskea.

189. *Hypnum radicale.* We consider this plant to be H. riparium, var. trichopodium Funk.

190. *Hypnum confervoides,* is Leskea subtilis.

192. *Hypnum illecebrum,* is H. Boscii Schwægr.

196. *Hypnum amœnum,* is H. pratense Koch.

199. *Hypnum robustum,* is an entirely different plant from that which Hook. and Schwægr. have figured as H. robustum; but the specimens are too imperfect for determination.

201. *Hypnum aduncum,* is H. commutatum var. alpinum.

203. *Hypnum fluitans,* belongs to H. aduncum var. tenue.

204. = 203.

206. *Hypnum cupressiforme var.* differs from this species, but the specimens are very imperfect.

207. *Hypnum cupressiforme var.,* is H. fastigiatum Brid.

211. *Hypnum trifarium,* does not appear to be this species.

217. *Hypnum abietinum var. minor,* is H. gracile nob.—also a native of Abyssinia.

219. *Hypnum catenulatum,* is entirely distinct from the European plant.

222. *Hypnum polyanthum,* belongs to Bridel's genus Pylaisæa, and is a new species, which we call Pyl. heteromalla.

224. *Hypnum erectum nov. sp.,* differs in no respect from Leskea rupincola Hedw.

232. *Fontinalis antipyretica.* The sterile specimen belongs to F. squamosa.

236. *Funaria Muhlenbergii,* is F. Hibernica.

247. *Bryum trichodes var.,* is Meesia Albertinii Bryol. Europ.

253. *Bryum punctatum.* This plant resembles certainly small-leaved forms of Mnium punctatum; it differs, however, essentially from that species in its more delicate leaves, which are not terminated by a short mucro, and which are bordered with a loose cellular margin; the male flowers are also different. We, therefore, must regard this elegant moss as a distinct species, which may be called Mnium pseudopunctatum.

257. *Bryum spinosum.* Very different from Mnium spinosum. The leaves are more delicate, with a less pronounced margin, which is pale yellow. The marginal teeth of the leaves are longer, sharper, not in pairs nor spinular, but soft; and the pendulous capsule is smaller. It differs also in the male flowers. We have named this species after its discoverer, Mnium Drummondi.

259. *Bryum marginatum,* is Mnium orthorhynchum, var. tenellum, capsulis oblongis attenuatis.

260. *Bryum carneum,* is Br. Wahlenbergii, as is also No. 261.

263. *Bryum nutans var.* The specimen marked A is Bry. (Pohlia) acuminatum var. pulchellum: and B is Bry. (Cladodium) arcticum; the same form as occurs in Switzerland, the Tyrol, and Norway.

266. *Bryum turbinatum,* is Br. (Clad.) inclinatum, var. foliis angustioribus longius aristatis.

267. *Bryum turbinatum var. pallens,* is Br. (Clad.) uliginosum.

276. *Polytrichum commune var. formosum,* is the common form of P. commune.

279. *Polytrichum pallidisetum,* is the common form of P. formosum.

280. *Polytrichum pallidisetum, var.,* is P. gracile Menz.

284. *Polytrichum urnigerum,* is the var. β. crassum.

BRUCH AND SCHIMPER.

Contributions towards a FLORA *of* SOUTH AMERICA. *Enumeration of Plants collected by* MR. SCHOMBURGK, *in British Guiana.—By* GEORGE BENTHAM, ESQ.

(*Continued from p.* 378.)

ORCHIDACEÆ.

(*Determined and described by* DR. LINDLEY.)

781. Pleurothallis *emarginata, Lindl. Gen. et Sp. Orch. p.* 6.—British Guiana, *Schomburgk.*

782. Stelis *ophioglossoides, Swartz.—Lindl. Gen. et Sp. Orch. p.* 12.—Roraima Expedition, *Schomburgk, n.* 1025.

783. S. *argentata, Lindl. Bot. Reg.* 1842. *Misc. p.* 64.—British Guiana, *Schomburgk, n.* 427.

784. Bolbophyllum *quadrisetum, Lindl.* (*sp. n.*), folio oblongo-lanceolato acuto basi angustato, spica pedunculata rectiuscula, pedunculo 2-3-vaginato æquali, rachi tenui, bracteis ovatis floribus subæqualibus, sepalis acutissimis, petalis linearibus acuminatis serrulatis, labello oblongo marginato bilamellato, columna biseta.—Flores coriacei resupinati. Petala et columnæ setæ subsimilia. Antheræ callo cristatæ. British Guiana, *Schomburgk.*

785. Epidendrum *durum, Lindl. in Hook. Journ. Bot.* 3. *p.* 87.—British Guiana, *Schomburgk.*

786. E. *rigidum, Jacq.—Lindl. Gen. et Sp. Orch. p.* 110.—British Guiana, *Schomburgk, n.* 688.

787. E. *clavatum, Lindl. Bot. Reg. t.* 1870.—British Guiana, *Schomburgk.*

788. E. *longicolle, Lindl. Bot. Reg.* 1838, *Misc. p.* 49.—British Guiana, *Schomburgk.*

789. E. *viviparum, Lindl. Bot. Reg.* 1840, *Misc. p.* 10.—British Guiana, *Schomburgk.*

790. E. *raniferum, Lindl. Gen. et Sp. Orch. p.* 109.—British Guiana, *Schomburgk, n.* 424.

791. E. *fuscatum, Swartz.—Lindl. Gen. et Sp. Orch. p.* 104. —British Guiana, *Schomburgk.*

792. E. *fragrans, Swartz.—Lindl. Gen. et Sp. Orch. p.* 97. —British Guiana, *Schomburgk, n.* 423.

793. E. *imantophyllum, Lindl. Gen. et Sp. p.* 106.—British Guiana, *Schomburgk, n.* 426.

794. E. *Schomburgkii, Lindl. Bot. Reg.* 1838, *t.* 53.—Conokon mountains, *Schomburgk, n.* 834.

795. E. *Schomburgkii, Lindl.* var?—Leaves spotted with pink. Petals and sepals a beautiful violet colour, labellum violet, with a small yellow disk.—Attarypon mountains, *Schomburgk, n.* 581.

796. E. *sp.* E. *elliptico* affinis, floribus luteis.—Sandy savannahs, British Guiana, *Schomburgk, n.* 506. Specimens too imperfect to determine.

797. E. *chloranthum, Lindl. Bot. Reg.* 1838, *Misc. p.* 25.—British Guiana, *Schomburgk.*

798. E. *graniticum, Lindl. in Hook. Journ. Bot.* 3. *p.* 83.—At Smyth's cataract, on the Corantyn, *Schomburgk, n.* 195.

799. E. *pachyanthum, Lindl. Bot. Reg.* 1838. *Misc. p.* 31. —British Guiana, *Schomburgk.*

800. E. *bicornutum, Hook. Bot. Mag. t.* 3332.—British Guiana, *Schomburgk, n.* 429.

801. E. *microphyllum, Lindl. in Hook. Journ. Bot.* 3. *p.* 85. —British Guiana, *Schomburgk.*

802. Diothonea *imbricata, Lindl. Sert. Orchid. t.* 40. *n.* 1. —Mountains of the Roraima chain at the heighth of 5000 to 6000 feet, *Schomburgk.*

803. Schomburgkia *crispa, Lindl. Sert. Orchid. t.* 10.—On the Corantyn, and on the Berbice, *Schomburgk, n.* 193.

804. S. *marginata, Lindl. Sert. Orchid. t.* 13.—British Guiana, *Schomburgk.*

805. Brassavola, *sp.*, perhaps B. *angustata, Lindl.*; but the specimens too imperfect to determine.—British Guiana, *Schomburgk, n.* 428.

806. Cattleya *superba, Schomb.—Lindl. Sert. Orchid. t.* 22. —On trees along the Essequibo, north of the Rupunoony, *Schomburgk, n.* 699, in some sets.

807. Aspasia *variegata, Lindl. Bot. Reg. t.* 1907.—British Guiana, *Schomburgk, n.* 425.

808. Ornithocephalus *ciliatus, Lindl.*—British Guiana, *Schomburgk.*

809. Maxillaria *alba, Lindl.? Gen. et. Sp. Orch. p.* 143.—British Guiana, *Schomburgk.*

810. M. *eburnea, Lindl. Sert. Orchid. t.* 40. *n.* 2.—On rocks and trees near Mount Maravaca, *Schomburgk.*

811. Promenæa *graminea, Lindl. Bot. Reg.* 1843, *Misc. p.* 13.—On trees, British Guiana, *Schomburgk, n.* 503.

812. Huntleya *sessiliflora, Batem.—Lindl. Bot. Reg. sub t.* 1991.—British Guiana, *Schomburgk.*

813. H. *violacea, Lindl. Sert. Orchid. t.* 26.—On the Essequibo, *Schomburgk.*

814. Catasetum *poriferum, Lindl. Bot. Reg.* 1838. *Misc. p.* 89.—British Guiana, *Schomburgk.*

815. C. *longifolium, Lindl. Sert. Orchid. t.* 31.—On Eta Palm trees, British Guiana, *Schomburgk.*

816. Houlletia *vittata. Lindl. Bot. Reg.* 1841. *t.* 69.—Acaray Mountains, *Schomburgk.*

817. Galeandra *Devoniana, Schomb. in Lindl. Sert. Orchid. t.* 37.—Barcellos on the Rio Negro, *Schomburgk.*

818. G. *juncea, Lindl. Sert. Orcid. sub t.* 37.—Savannahs, near the river Berbice, *Schomburgk, n.* 269.

819. Zygopetalum *rostratum, Hook.—Lindl. Gen. et Sp. Orch. p.* 188.—On trees, British Guiana, *Schomburgk, n.* 502.

820. Z. Mackaii, *Hook?—Lindl. Gen. et Sp. Orch. p.* 187. —Roraima, *Schomburgk.*

821. Cyrtopodium *Andersonii, Br. Lindl. Gen. et Sp. Orch. p.* 188.—On the river Miejore, *Schomburgk.*

822. C. *cristatum, Lindl. Bot. Reg.* 1841 *sub t.* 8.—On rocks and trees, British Guiana, *Schomburgk, n.* 628.

823. C. *parviflorum, Lindl.* (*sp. n.*), sepalis petalisque undulatis, labelli lobis lateralibus falcatis obtusis intermedio cuneato dilatato basi tuberculato æqualibus.—Flores C.

cristato similes, sed duplo minores, et labellum omnino diversum.—On sand, British Guiana, *Schomburgk, n.* 617.

824. Masdevallia *Guayanensis, Lindl.* (*sp. n.*) folio lineari-lanceolato coriaceo obsolete trinervio apice obtuse tridentato, scapo breviore unifloro, bractea laxa obtusa pedicello breviore, flore ovato, sepalis aristato-acuminatis.—Caulis seu pedunculus 4-pollicaris.—Roraima expedition, *Schomburgk, n.* 1026.

825. Rodriguezia *secunda, Humb. et Kunth.—Lindl. Gen. et Sp. Orch.* p. 194.—British Guiana, *Schomburgk, n.* 430.

826. Oncidium *iridifolium, Humb. et Kunth.—Lindl. Gen. et Sp. Orch. p.* 202.—British Guiana, *Schomburgk.*

827. Fernandezia *elegans, Lodd.—Lindl. Gen. et Sp. Orch. p.* 207.—British Guiana, *Schomburgk.*

828. Dichæa *graminoides, Lindl. Gen. et Sp. Orch. p.* 209.—On trees, British Guiana, *Schomburgk. n.* 508.

829. Angræcum *Fasciola. Lindl. Bot. Reg.* 1840, *sub t.* 68.—British Guiana, *Schomburgk.*

830. Habenaria *seticauda, Lindl.* (*sp. n.*), foliis 5-6 oblongo-lanceolatis, racemo denso multifloro, bracteis foliaceis ovario subæqualibus, sepalis obtusis lateralibus majoribus reflexis, petalis oblongis uncatis indivisis, labello lineari pendulo apice incurvo, calcare longissimo recto pendulo acuminato.—H. *obtusæ* affinis, 2-3-pedalis, spica foliosa et calcare setaceo acuminato longissimo bene distinguenda.—Pirara, *Schomburgk.*

831. H. *Schomburgkii, Lindl.* (*sp. n.*), foliis 4-5 lineari-lanceolatis erectis, racemo laxo paucifloro, bracteis acuminatis ovario brevioribus, petalis bipartitis liberis, laciniis anterioribus erectis falcatis galea obtusa longioribus, labelli tripartiti laciniis lateralibus setaceis intermedia lineari obtusa longioribus, calcare recto pendulo ovarii longitudine.—H. *gracili* proxima. Flores duplo majores.—In swamps on the Rio Branco, *Schomburgk, n.* 814.

832. Bonatea *pauciflora, Lindl. Gen. et Sp. Orch. p.* 329.—Dry savannahs, British Guiana, *Schomburgk, n.* 757.

833. B. *macilenta, Lindl.* (*sp. n.*), folio solitario lanceolato patulo, vagina foliacea adjecta, caule gracili bivaginato, racemo laxo trifloro, bracteis foliaceis cucullatis ovario longepe-

dunculato duplo brevioribus, petalis bipartitis, lacinia anteriore lineari acuminata æquali, labelli tripartiti laciniis linearibus intermedia latiori, calcare pendulo clavato ovarii longitudine, processubus carnosis crassis nanis truncatis, rostello ovato.—B. *paucifloræ* valde affinis.—British Guiana, *Schomburgk.*

834. Spiranthes *elata, Rich.—Lindl. Gen. et Sp. Orch. p.* 470.—British Guiana, *Schomburgk.*

835. S. *picta, Lindl. Gen. et Sp. Orch. p.* 475.—British Guiana, *Schomburgk.*

836. Stenorhynchos *orchioides, Rich.—Lindl. Gen. et Sp. Orch. p.* 477.—Savannahs of the Rupunoony, *Schomburgk.*

837. Goodyera *Guayanensis, Lindl. Gen. et Sp. Orch. p.* 494.—British Guiana, *Schomburgk, n.* 698.

838. Cleistes *rosea, Lindl. Gen. et Sp. Orch. p.* 410.—Savannahs, near lake Capoochy, *Schomburgk.*

839. C. *parviflora, Lindl. Gen. et Sp. Orch. p.* 410.—British Guiana, *Schomburgk.*

840. Pogonia *Surinamensis, Lindl.* (*sp. n.*), foliis supremis majoribus cordato-ovatis, floribus axillaribus nutantibus.—P. *pendulæ* valde affinis. Florum extricatu difficilium structura latet.—Christmas cataracts, on the river Berbice, *Schomburgk.*

841. Sobralia *liliastrum, Lindl. Gen. et. Sp. Orch. p.* 432.—Roraima, *Schomburgk, n.* 1059.

842. S. *sessilis, Lindl. Bot. Reg.* 1841, *t.* 17.—British Guiana, *Schomburgk.*

843. Epistephium *parviflorum, Lindl. Gen. et Sp. Orch. p.* 433.—Meadows near lake Tapakoma, and along the river Berbice, *Schomburgk.*

844. Vanilla *bicolor, Lindl. Gen. et Sp. Orch. p.* 436.—Demerara, *Schomburgk.*

845. Cypripedium *palmifolium, Lindl. Gen. et Sp. Orch. p.* 527.—Sandy savannahs, British Guiana, *Schomburgk.*

846. C. *Lindleyanum, Schomb.—Lindl. Gen. et Sp. Orch. p.* 531.—Roraima, *Schomburgk.*

(*To be continued*).

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Juniperus Bermudiana.

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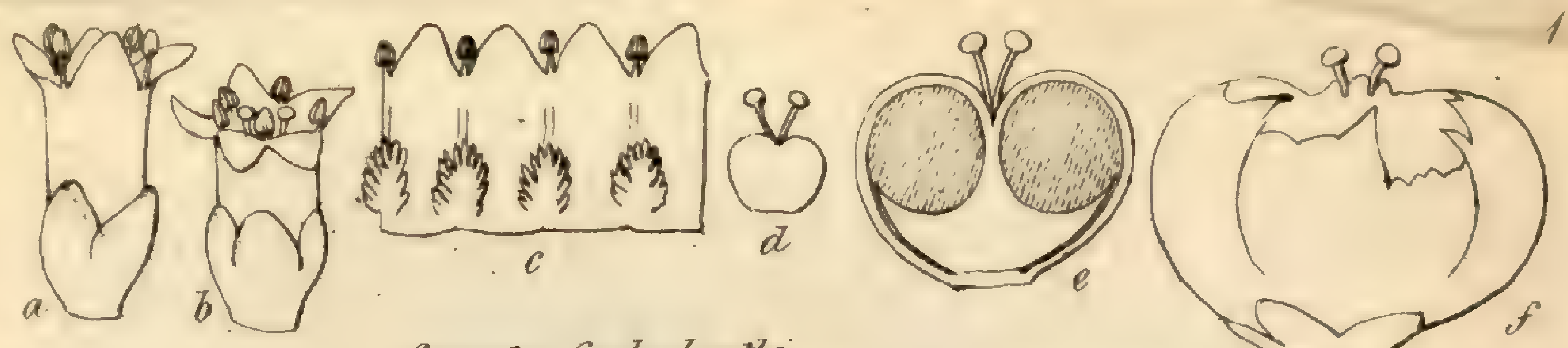

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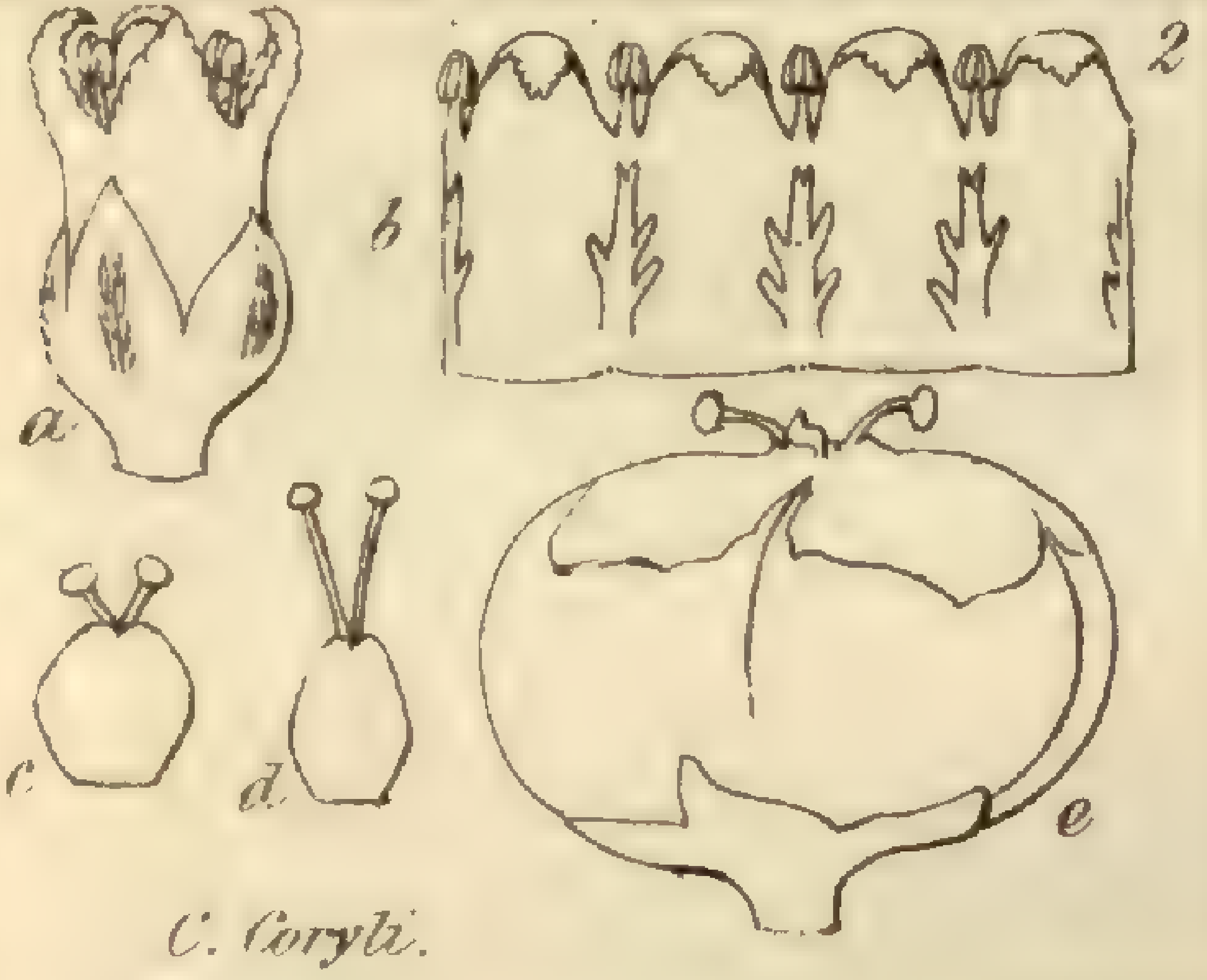

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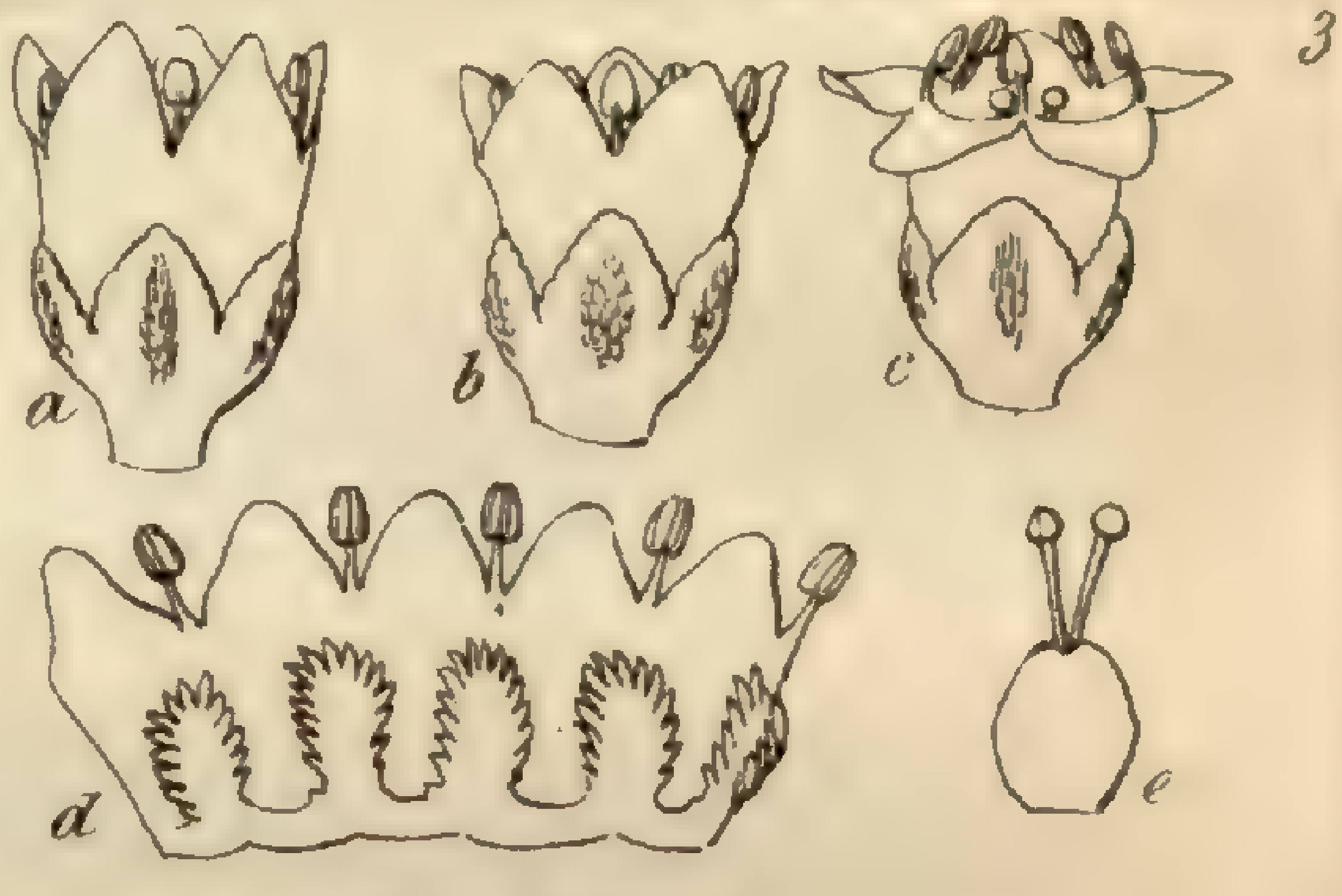

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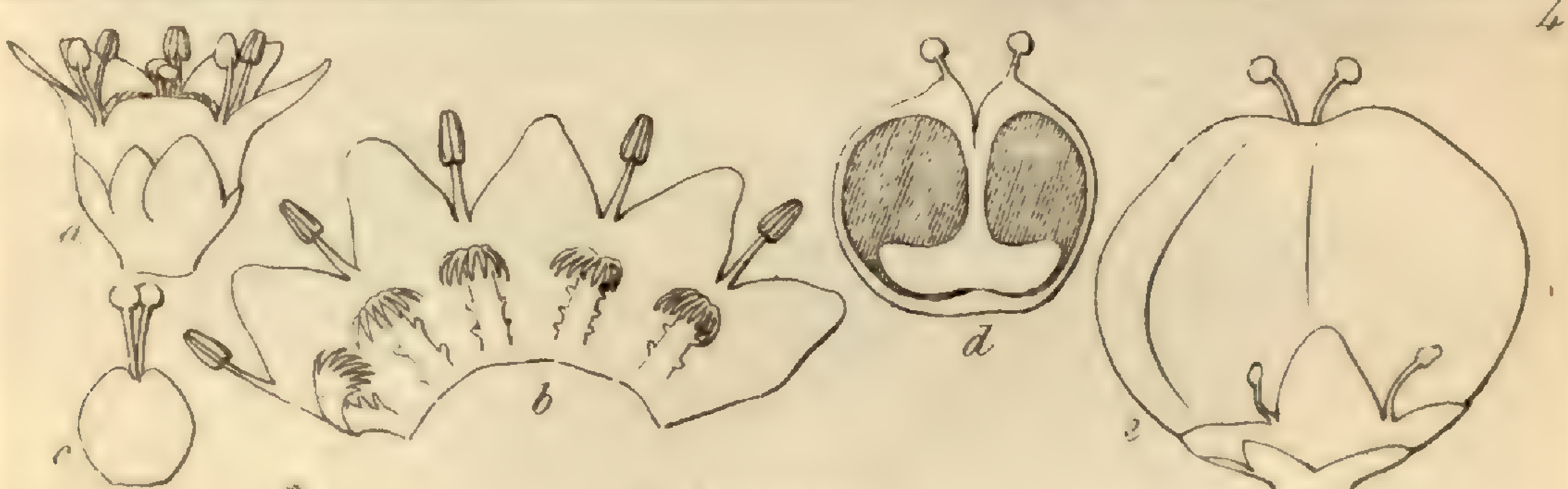

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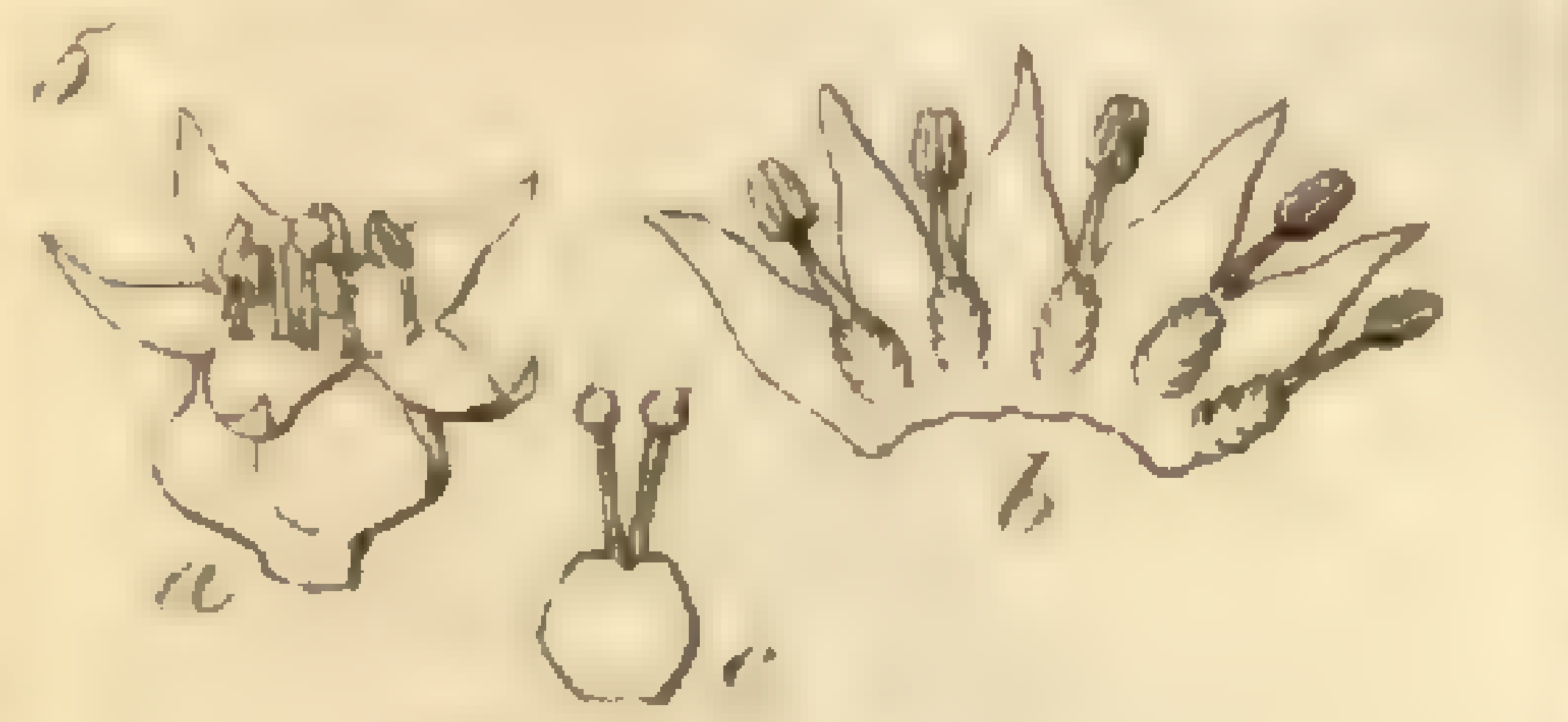

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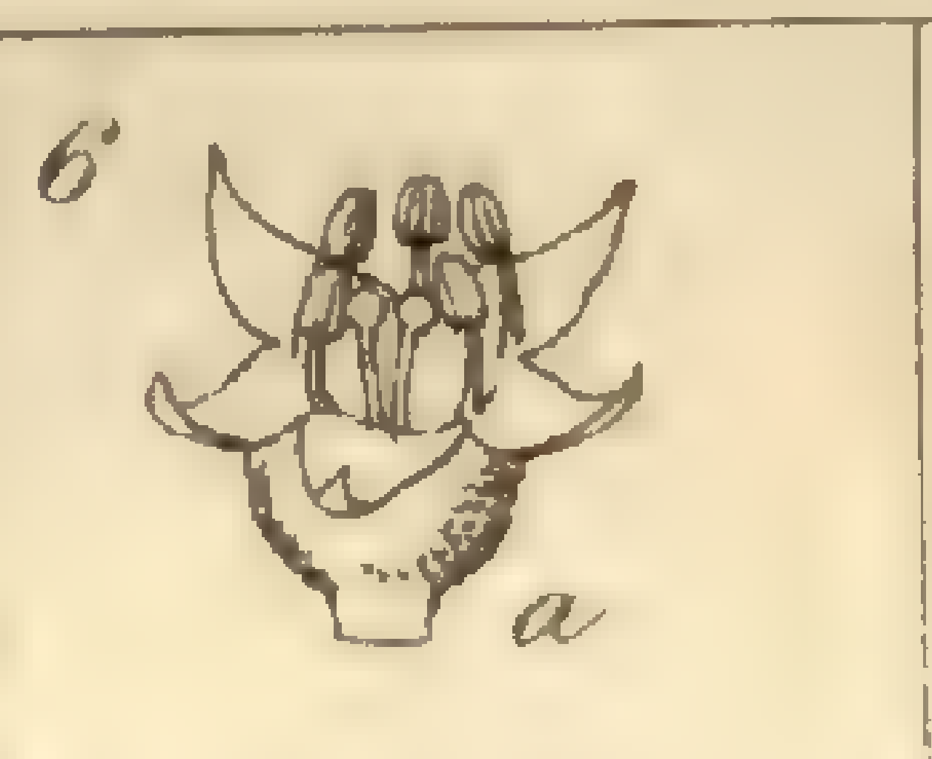

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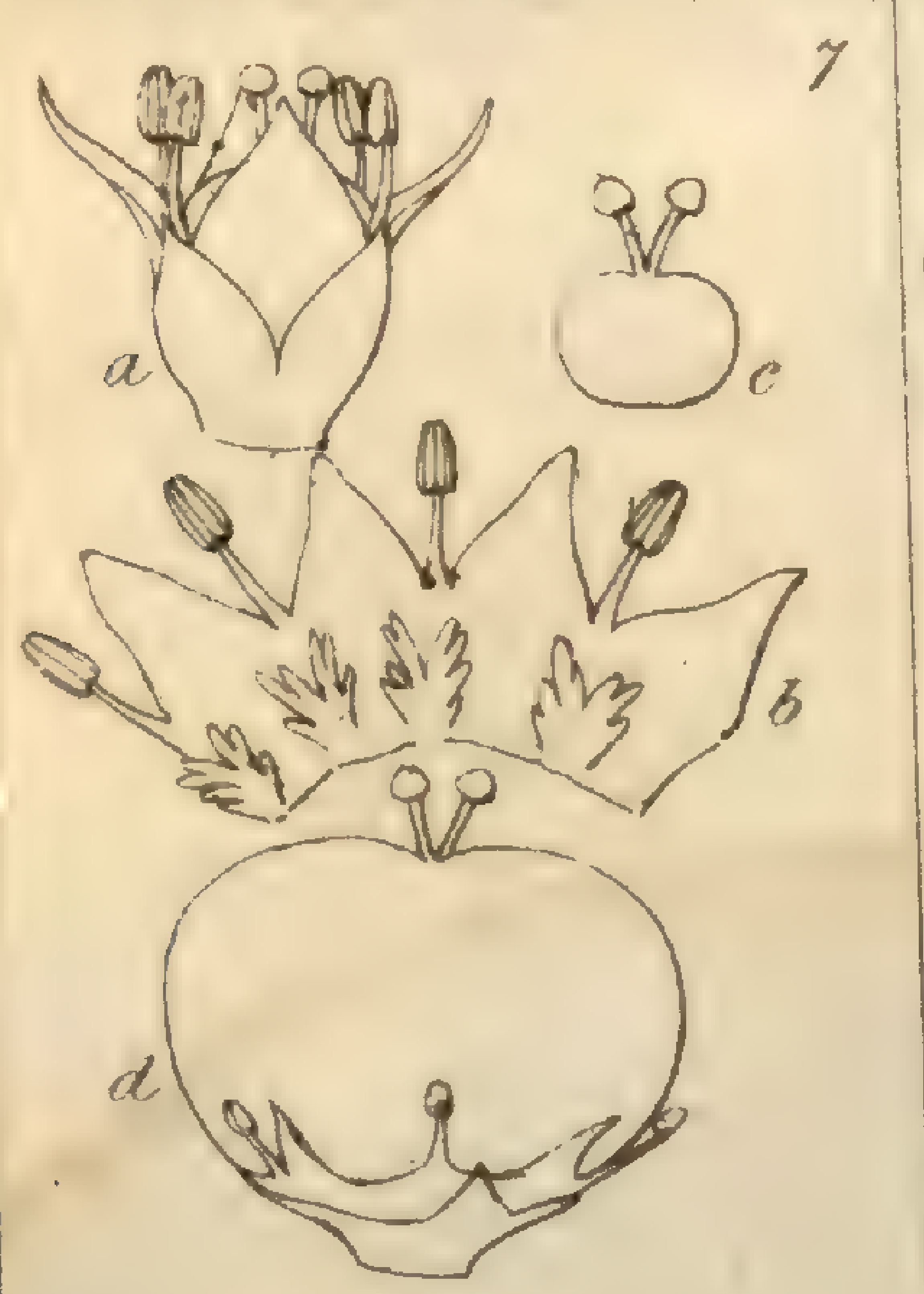
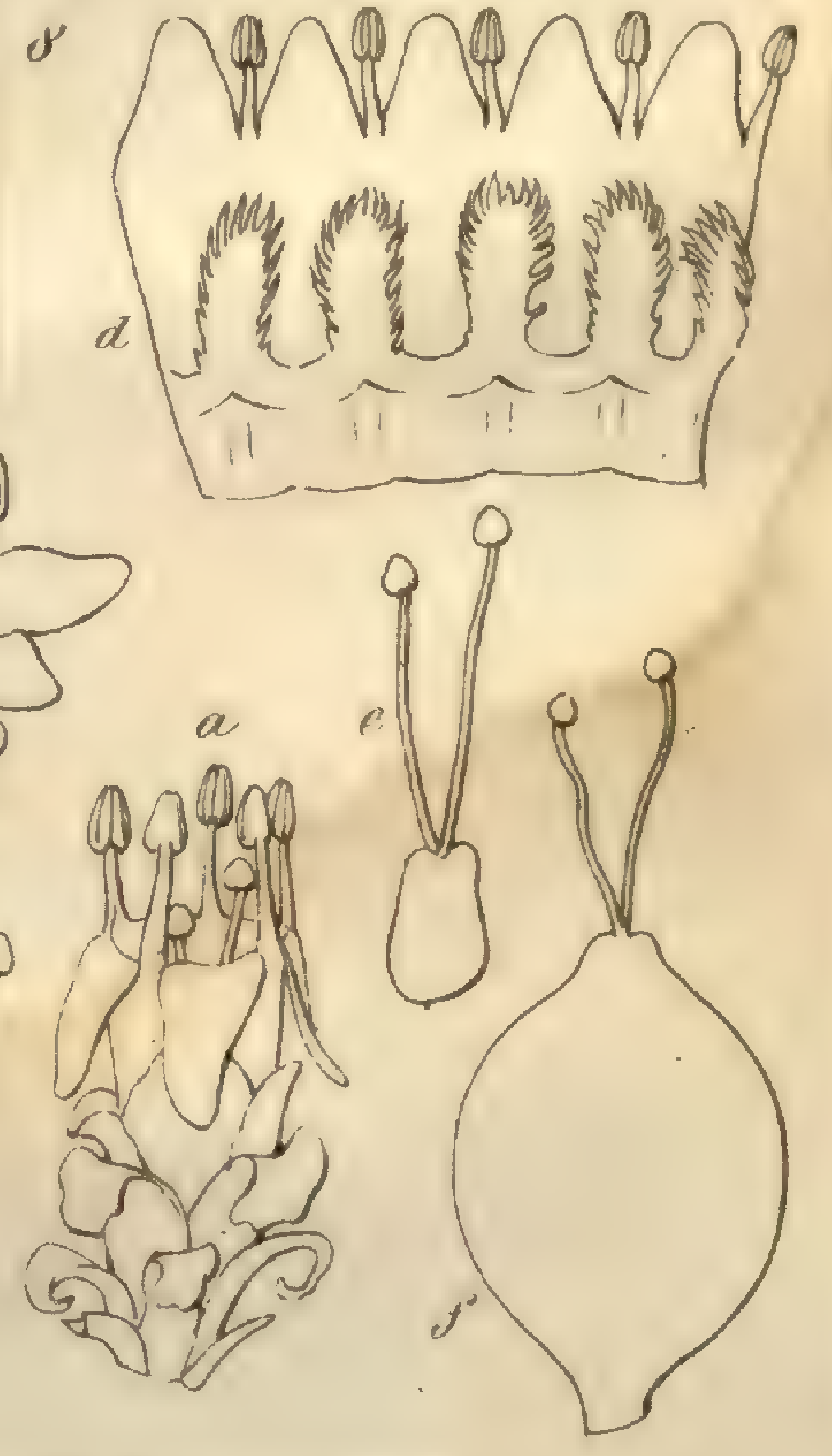


C. Polygonorum.



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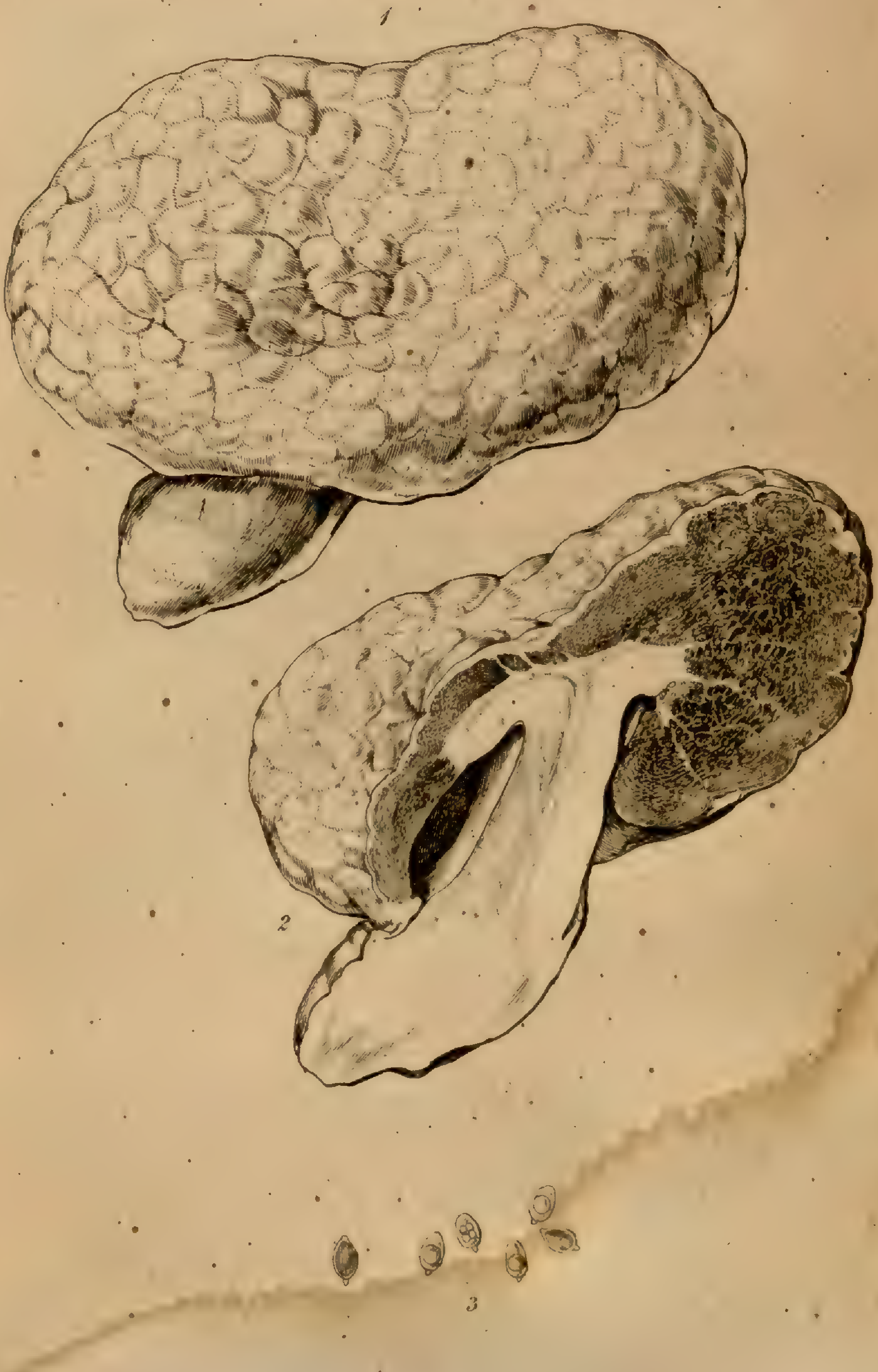

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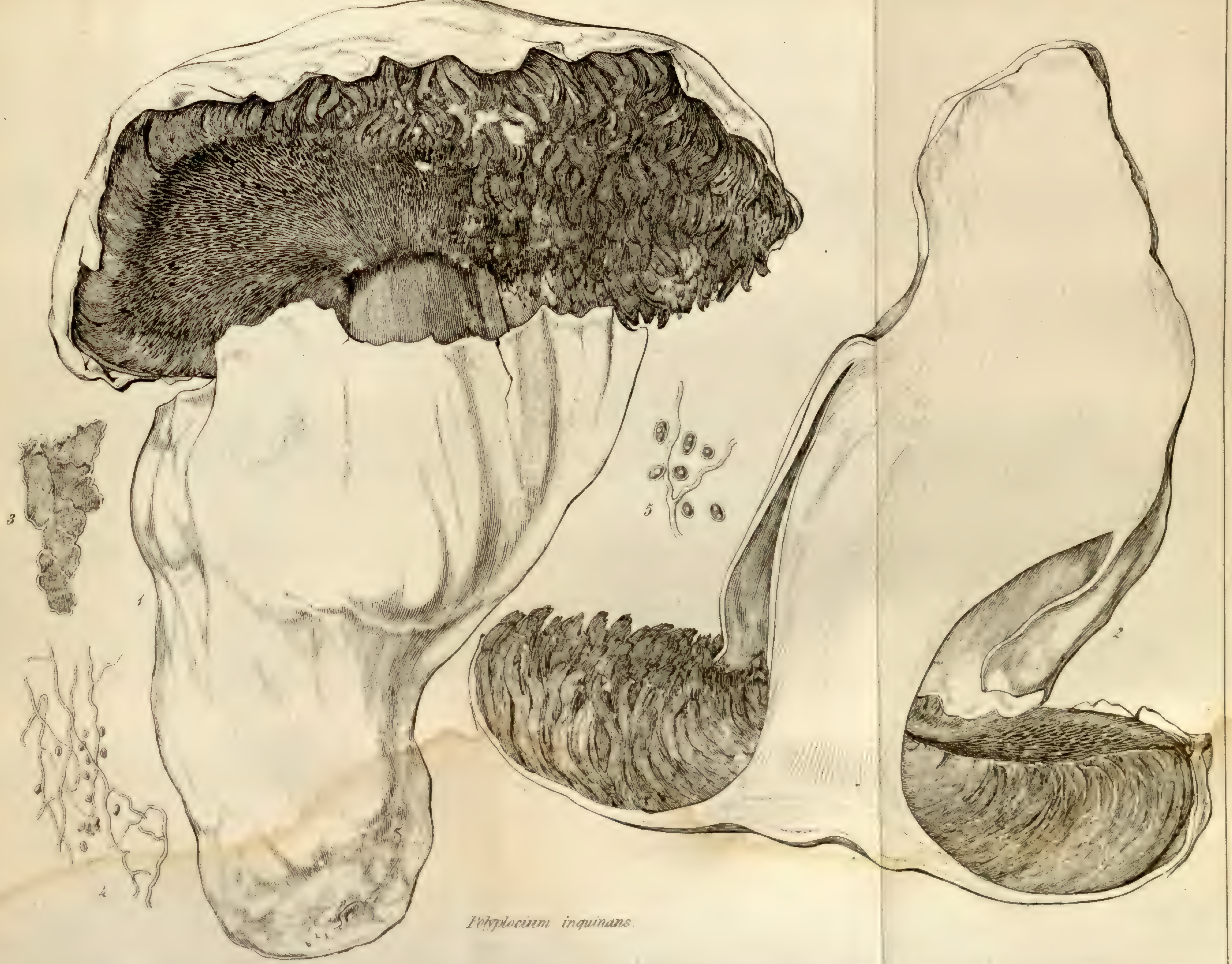

Polyplocium inquinans.

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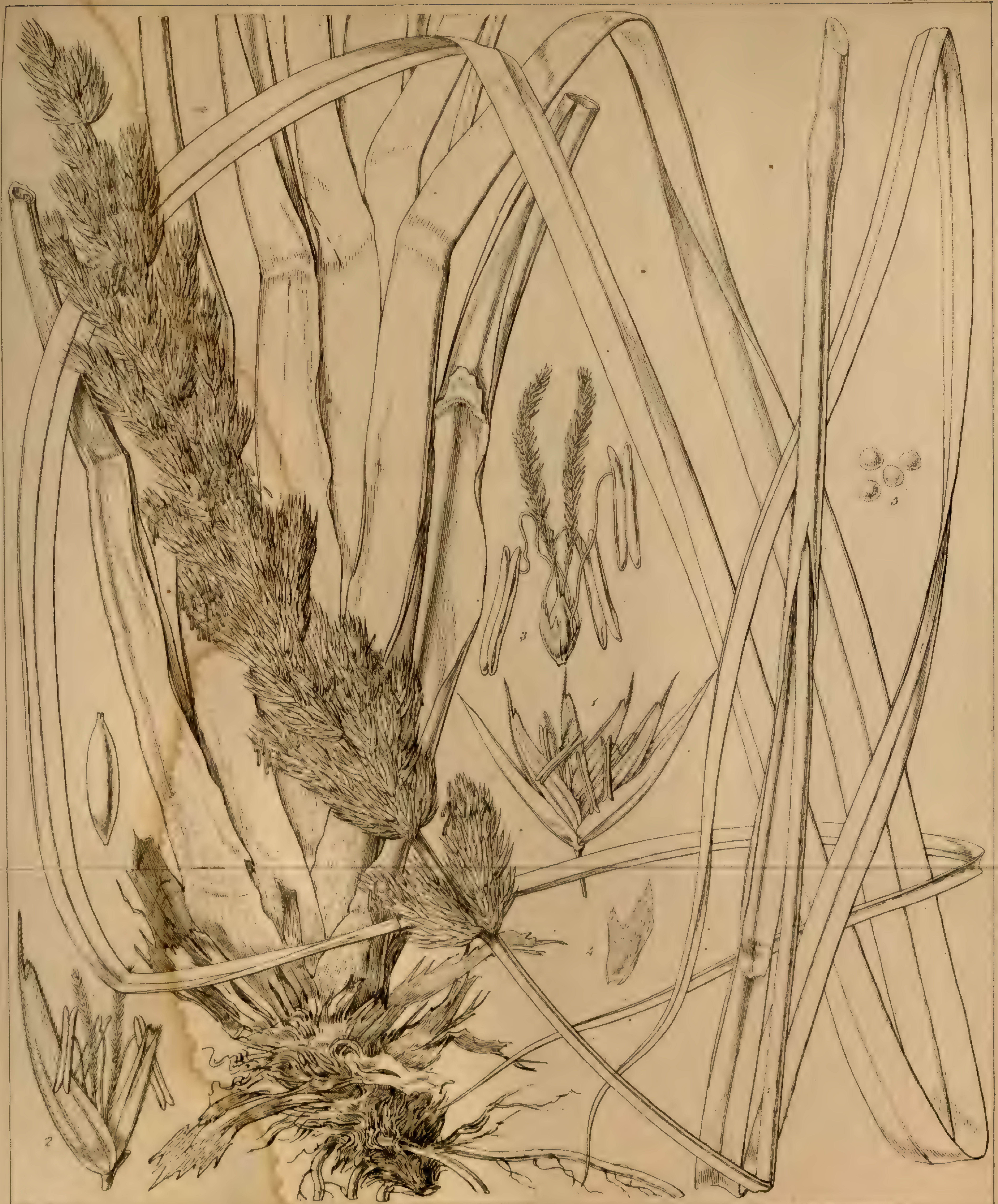

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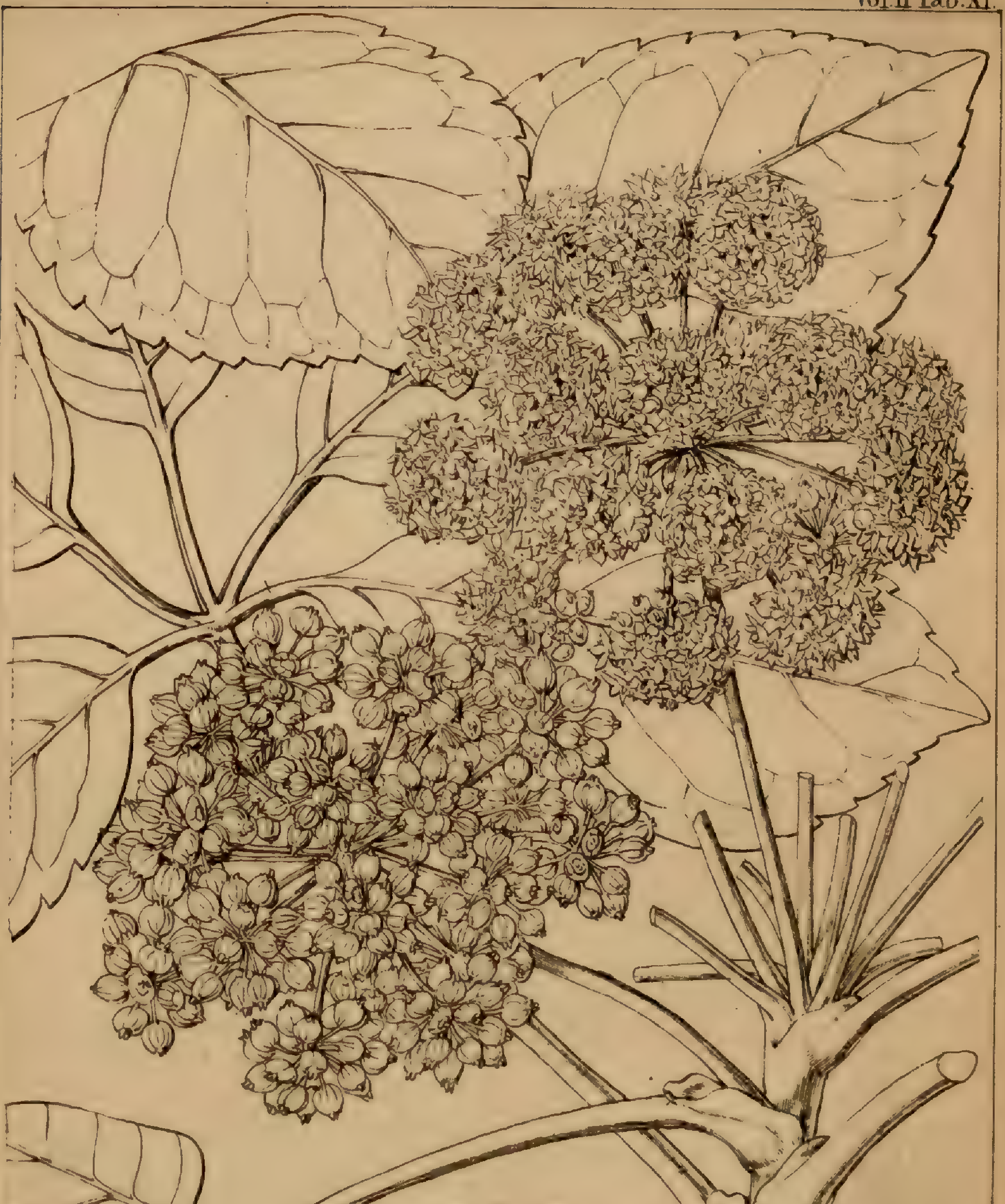

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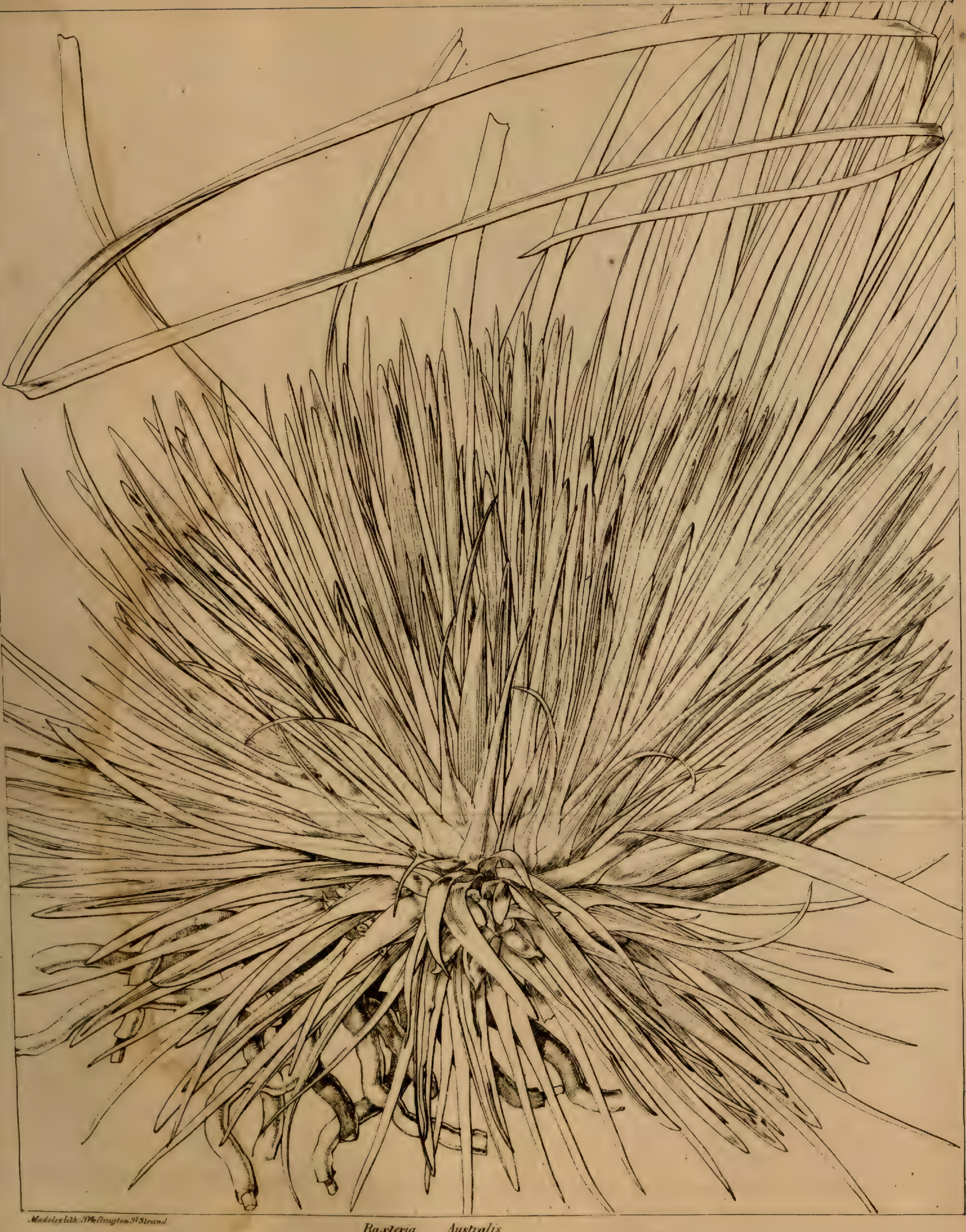

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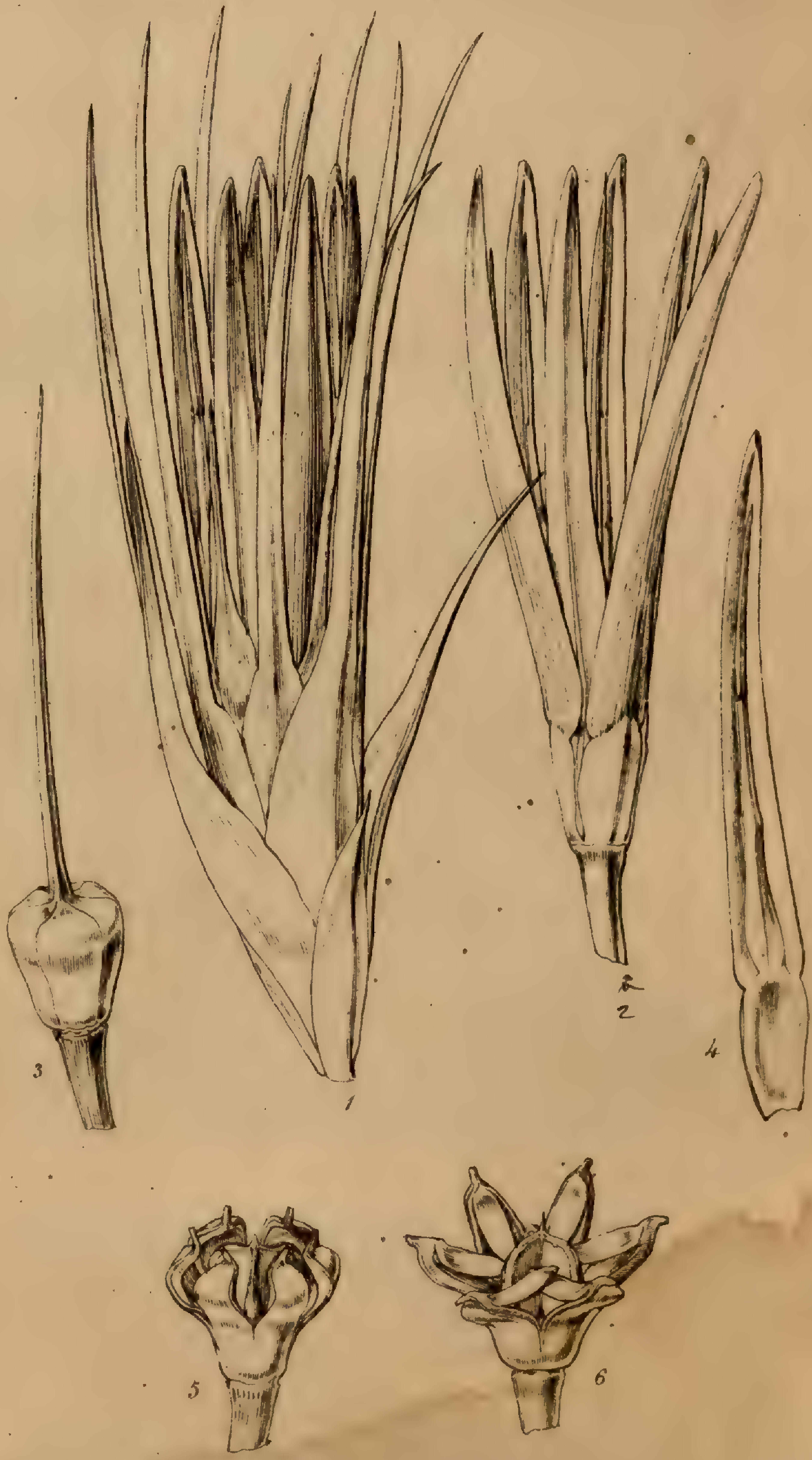

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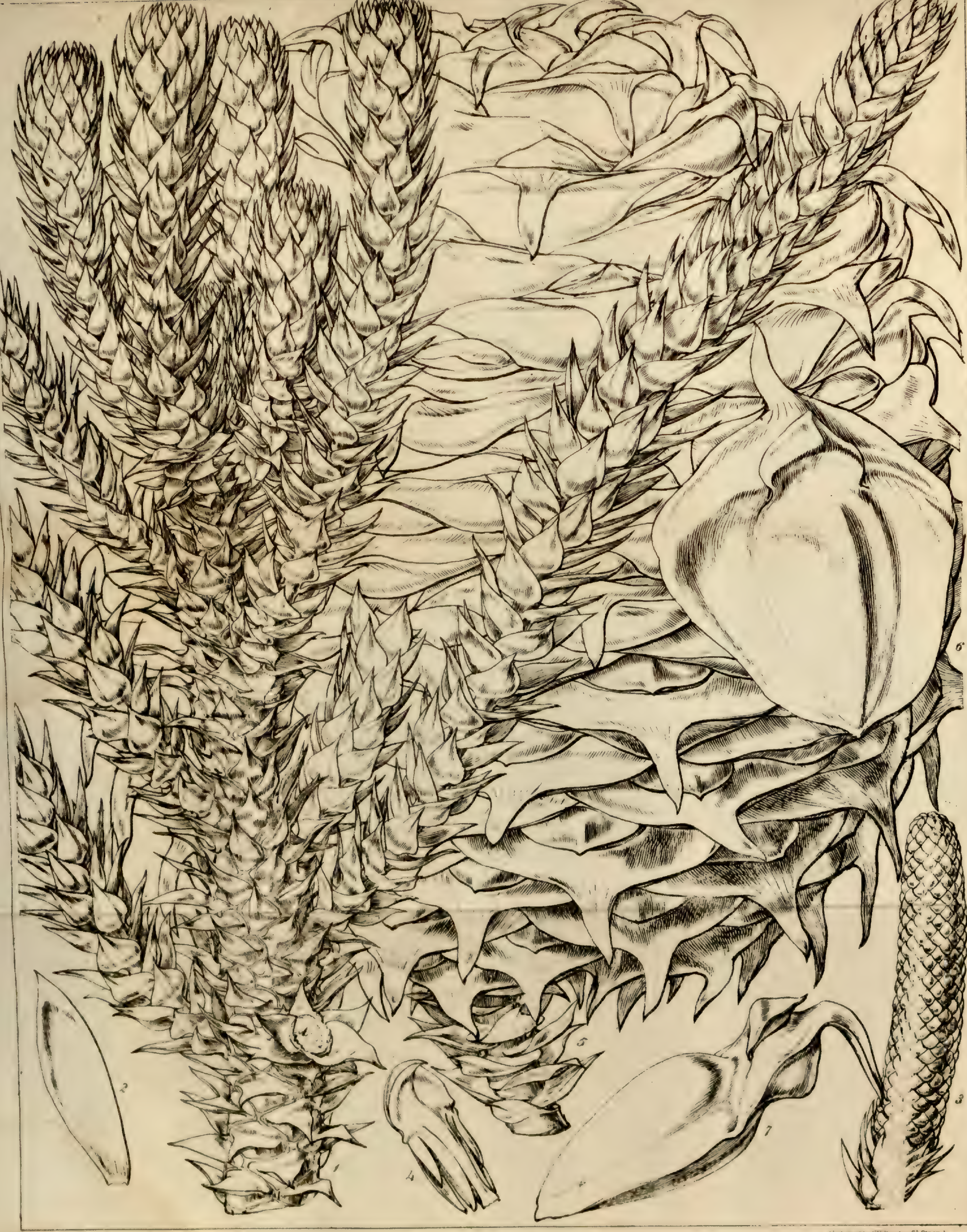

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Senebiera rytidocarpa.

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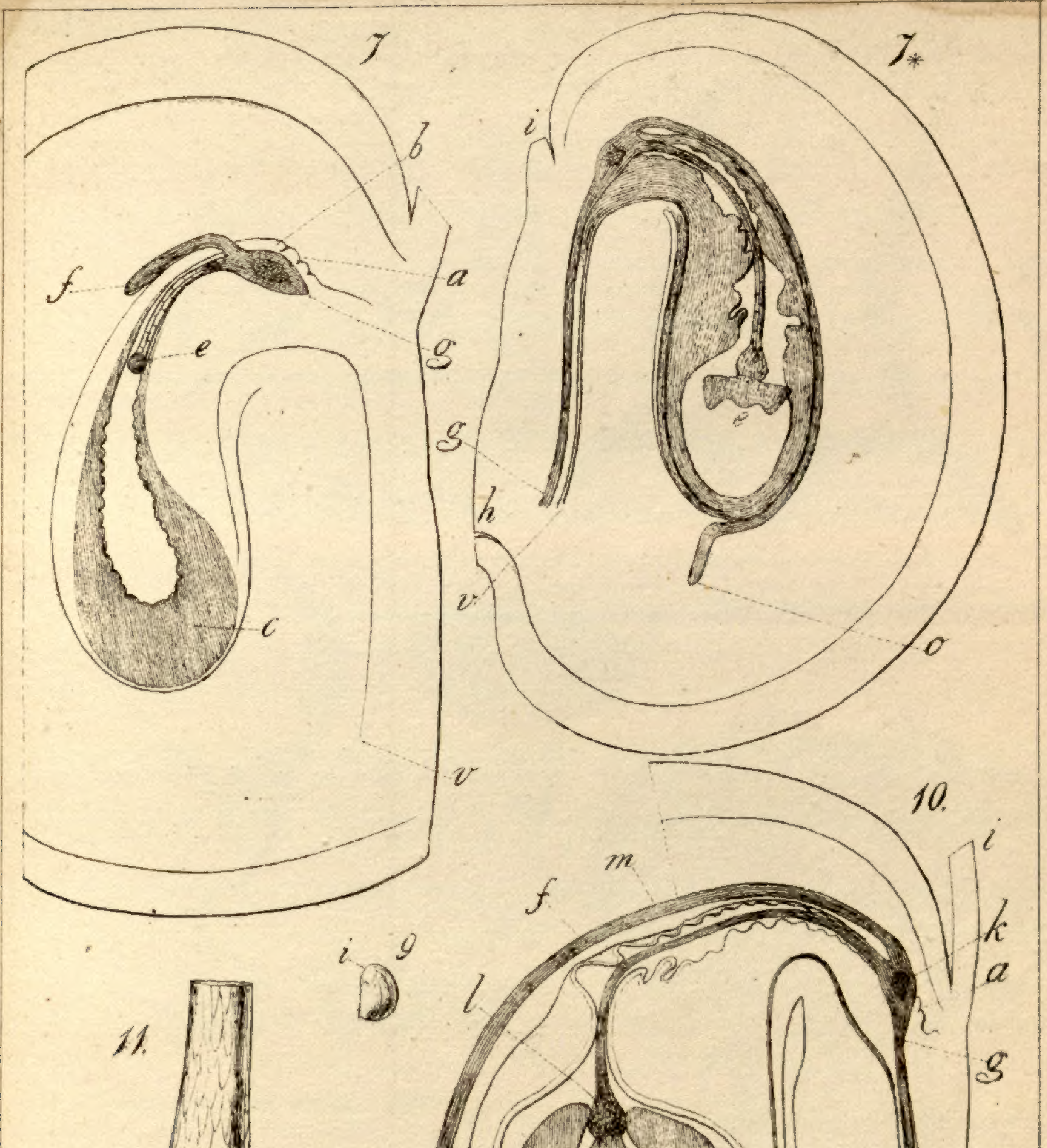
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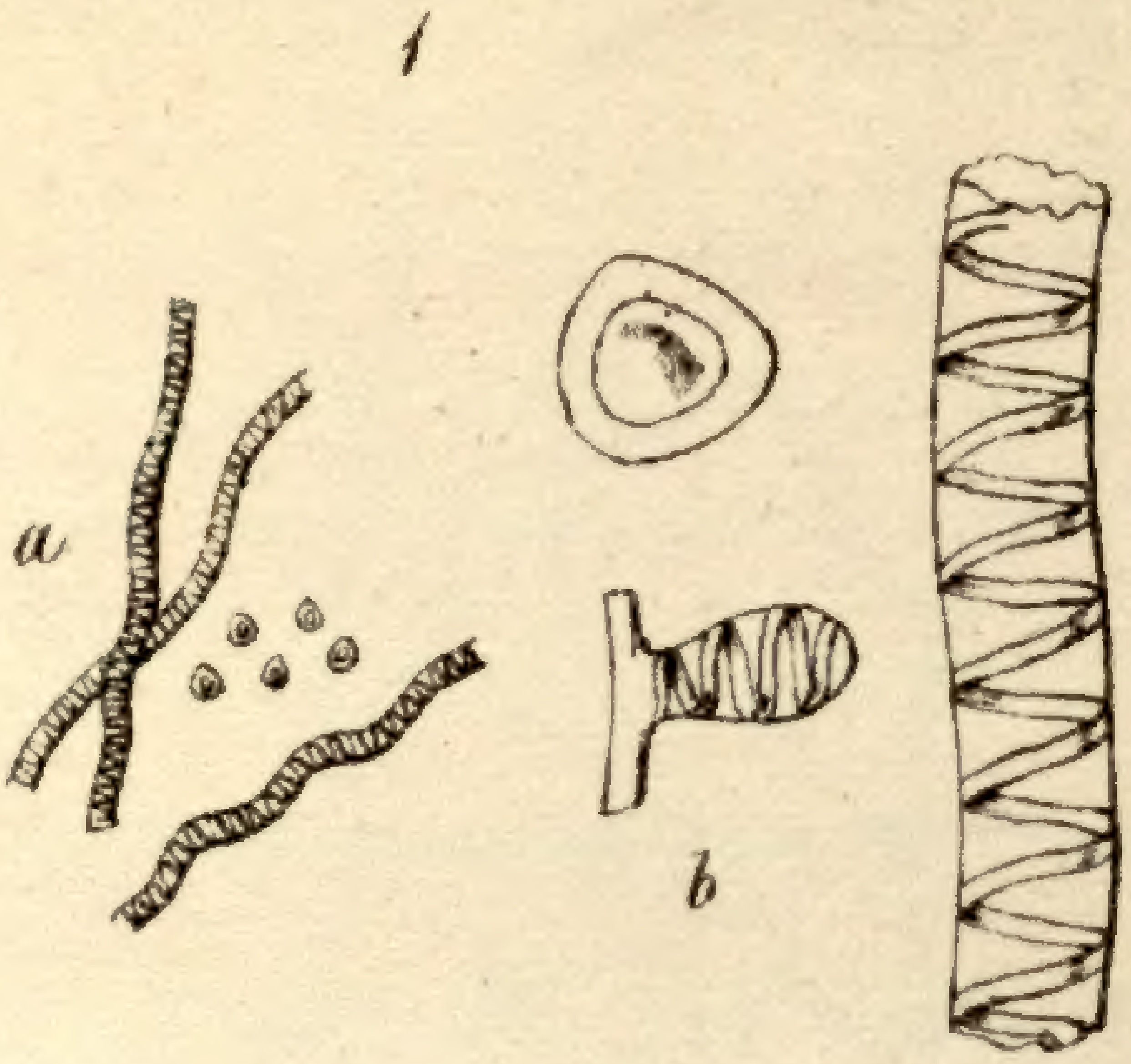

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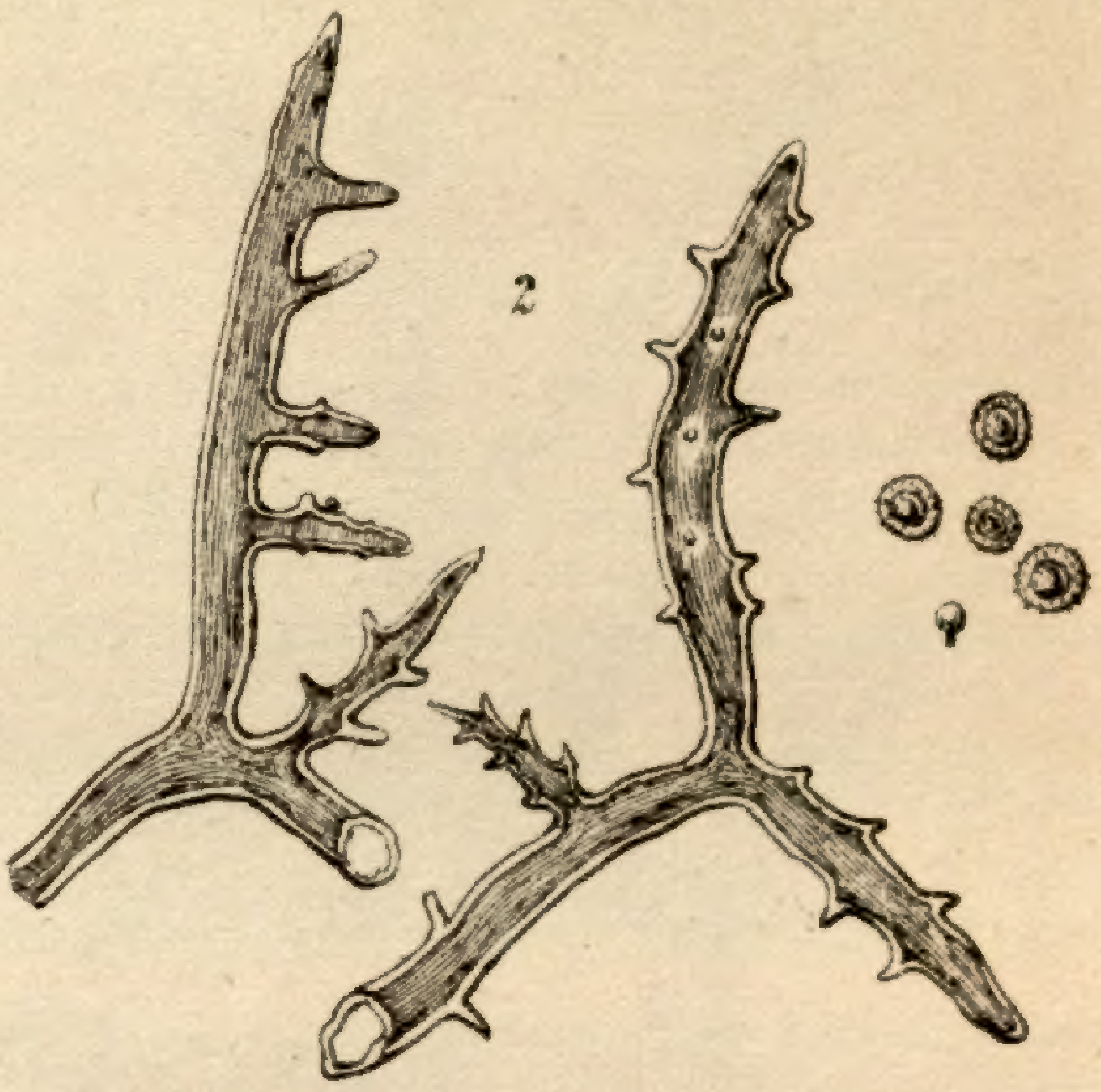

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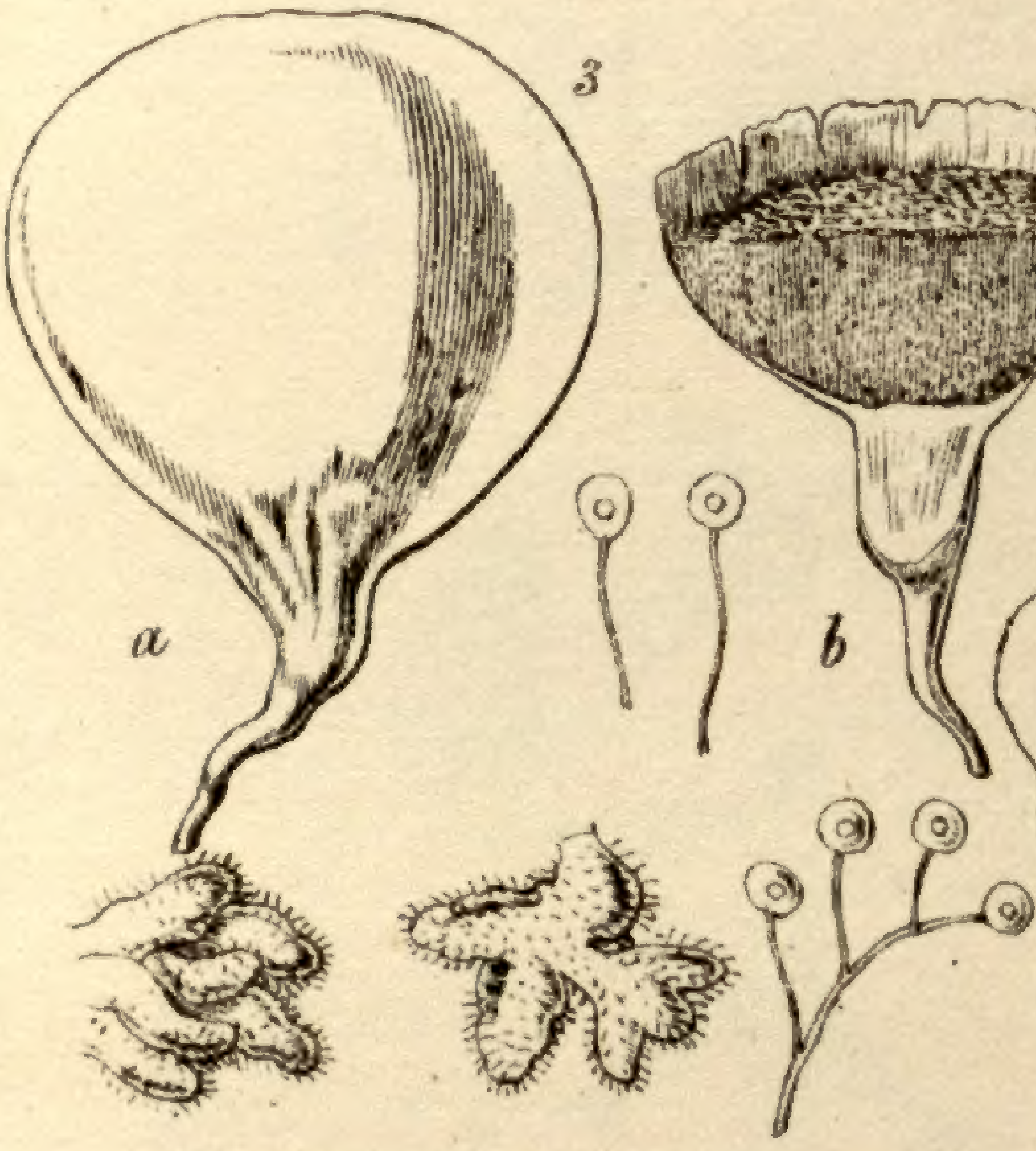
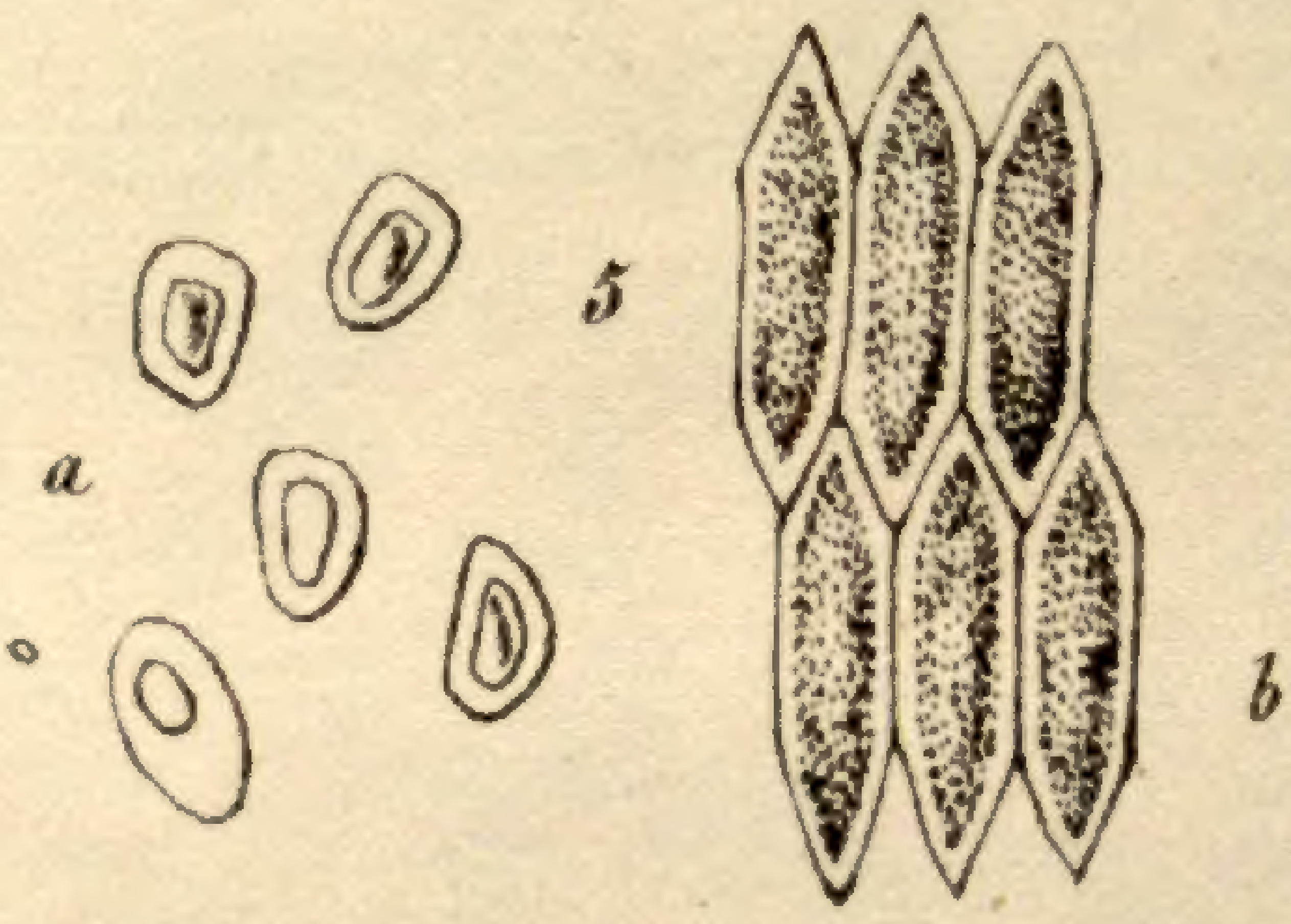
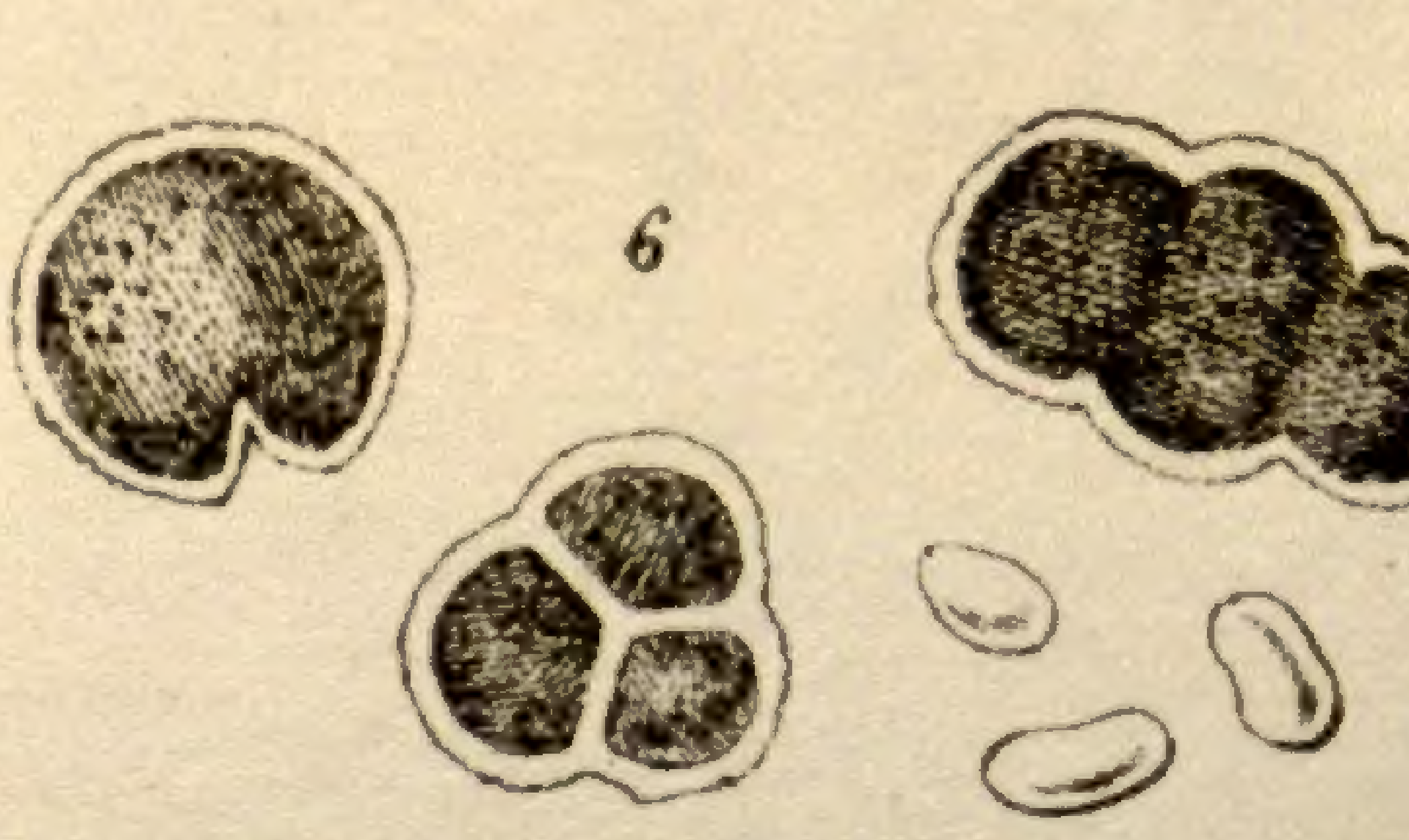


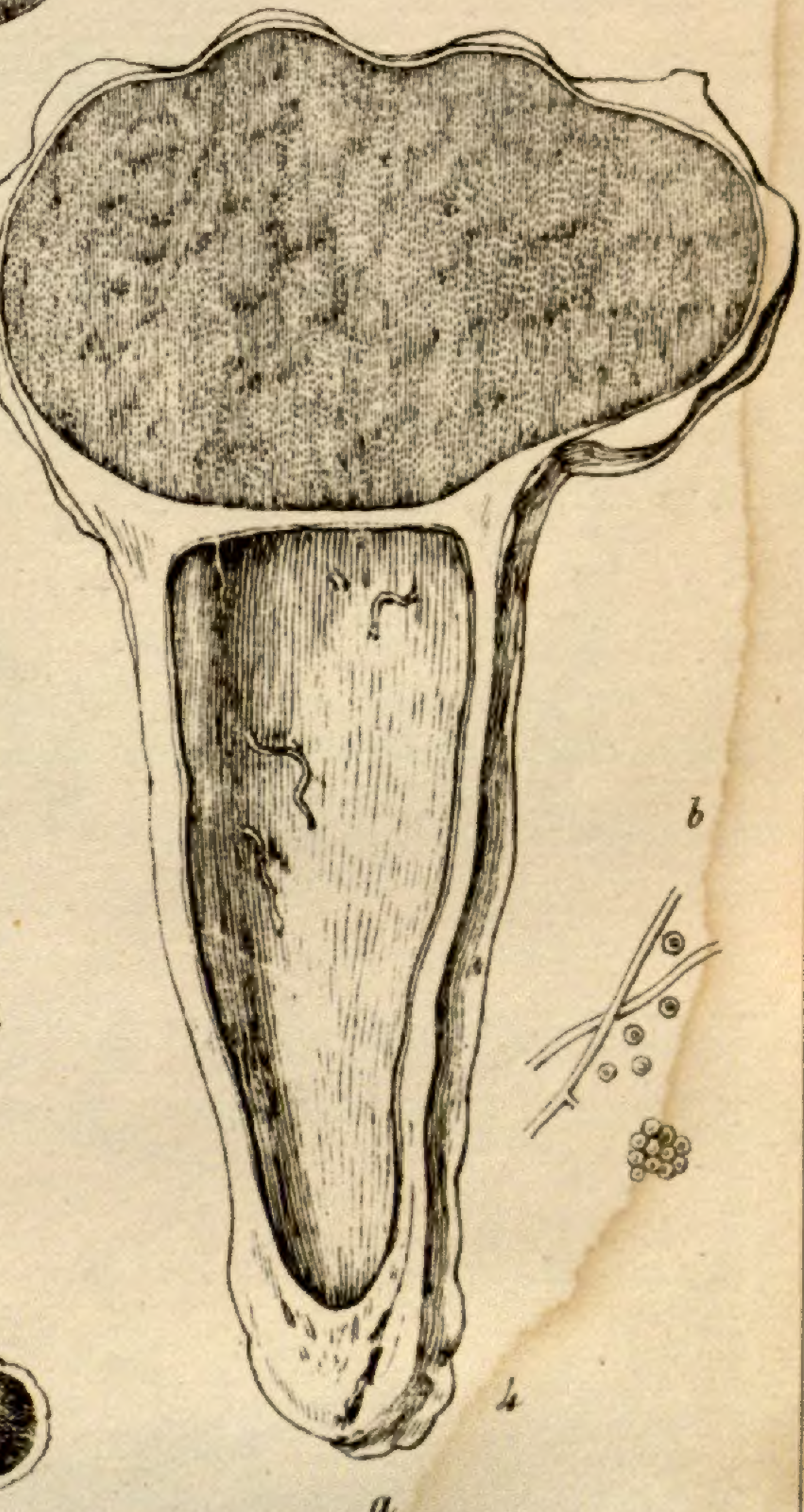
Scoleciocarpus tener, Berk.



Æcidium australe. Berk.



Uredo pilulæformis, Berk.

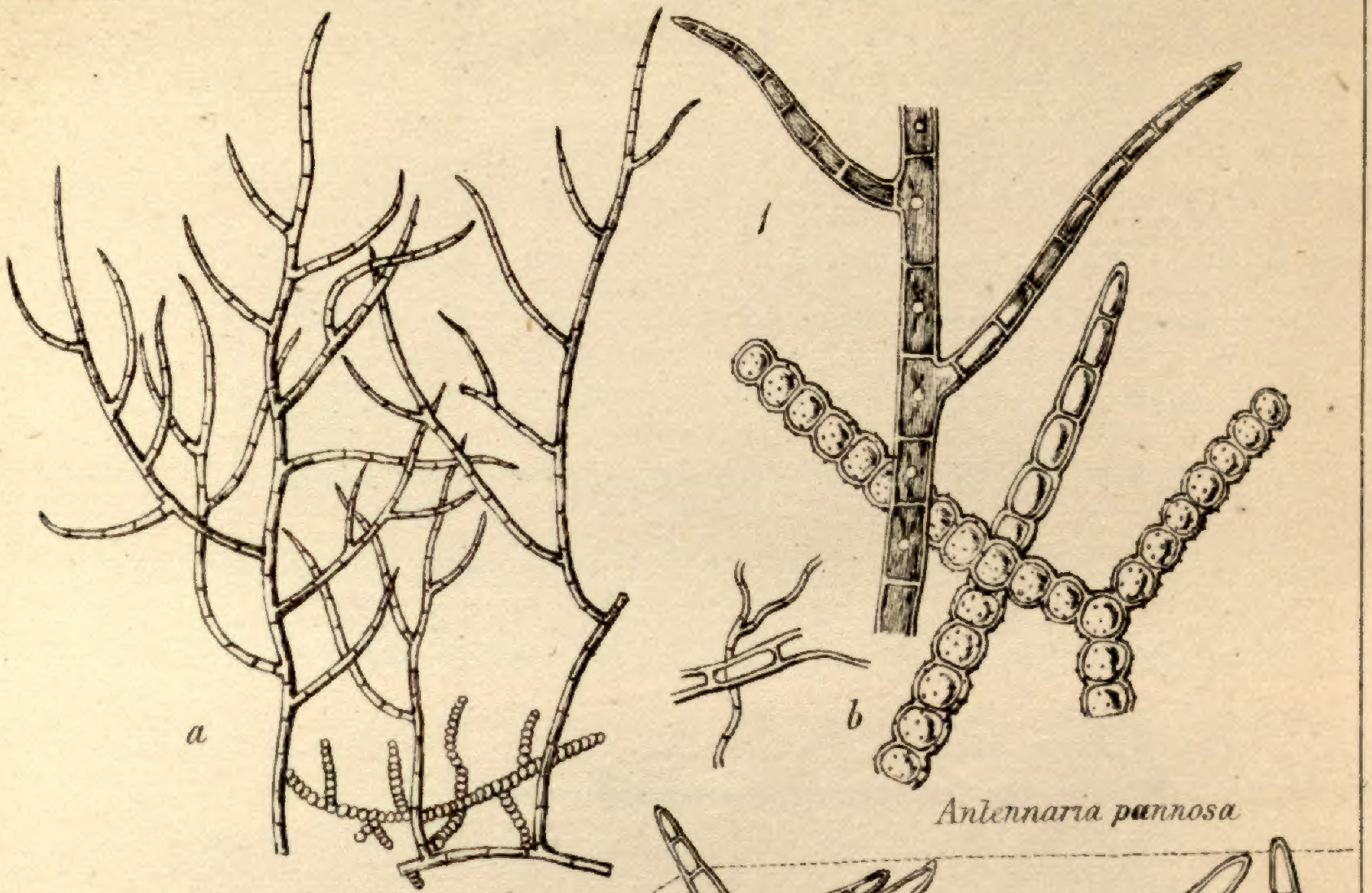


Phellorinia inquinans, Berk.

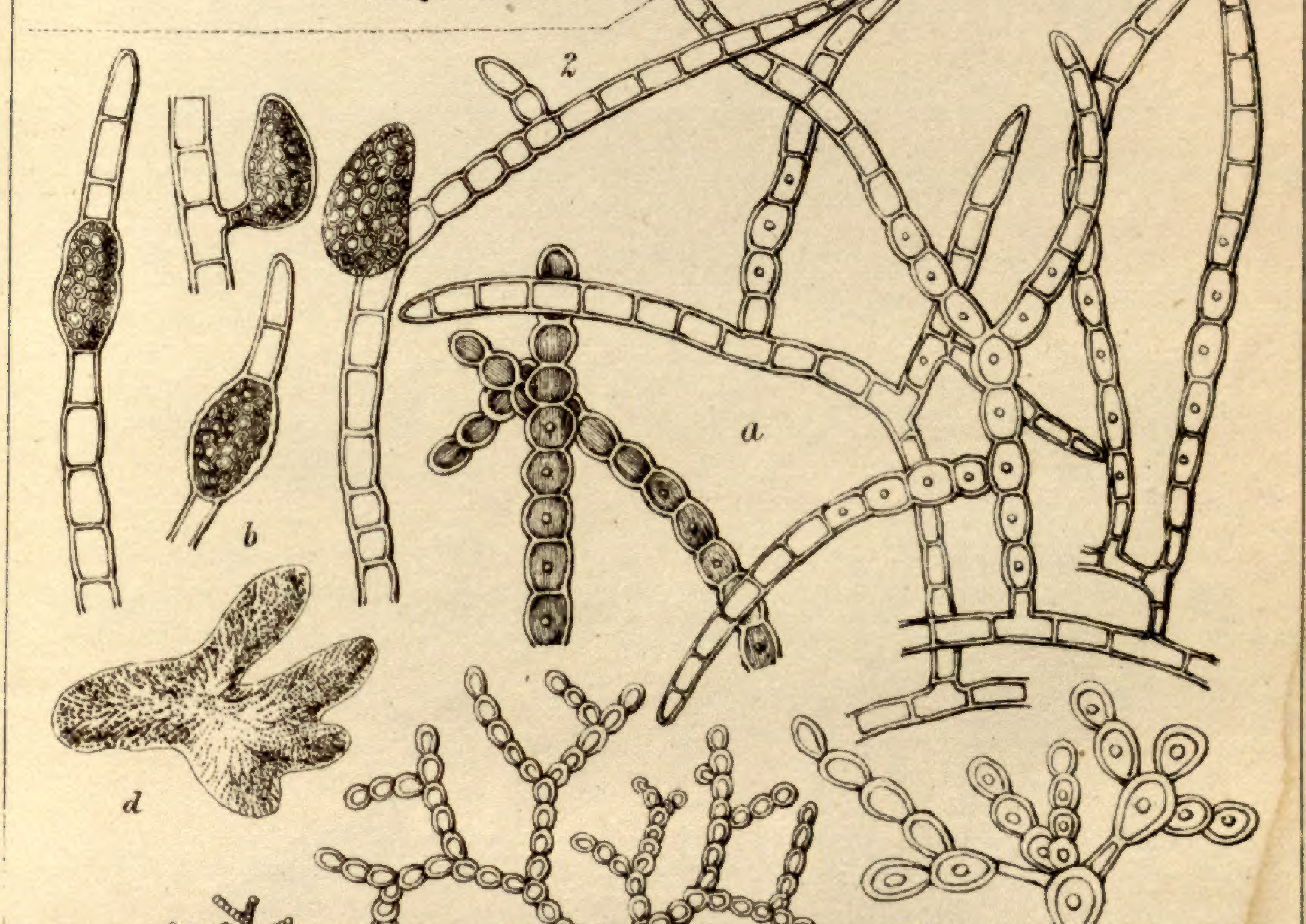
Revd. M.J.B. del.

Madeley litho 3 Wellington St. Strand.

London Published by H. Baillière Regent Street, 1843.



Antennaria pannosa



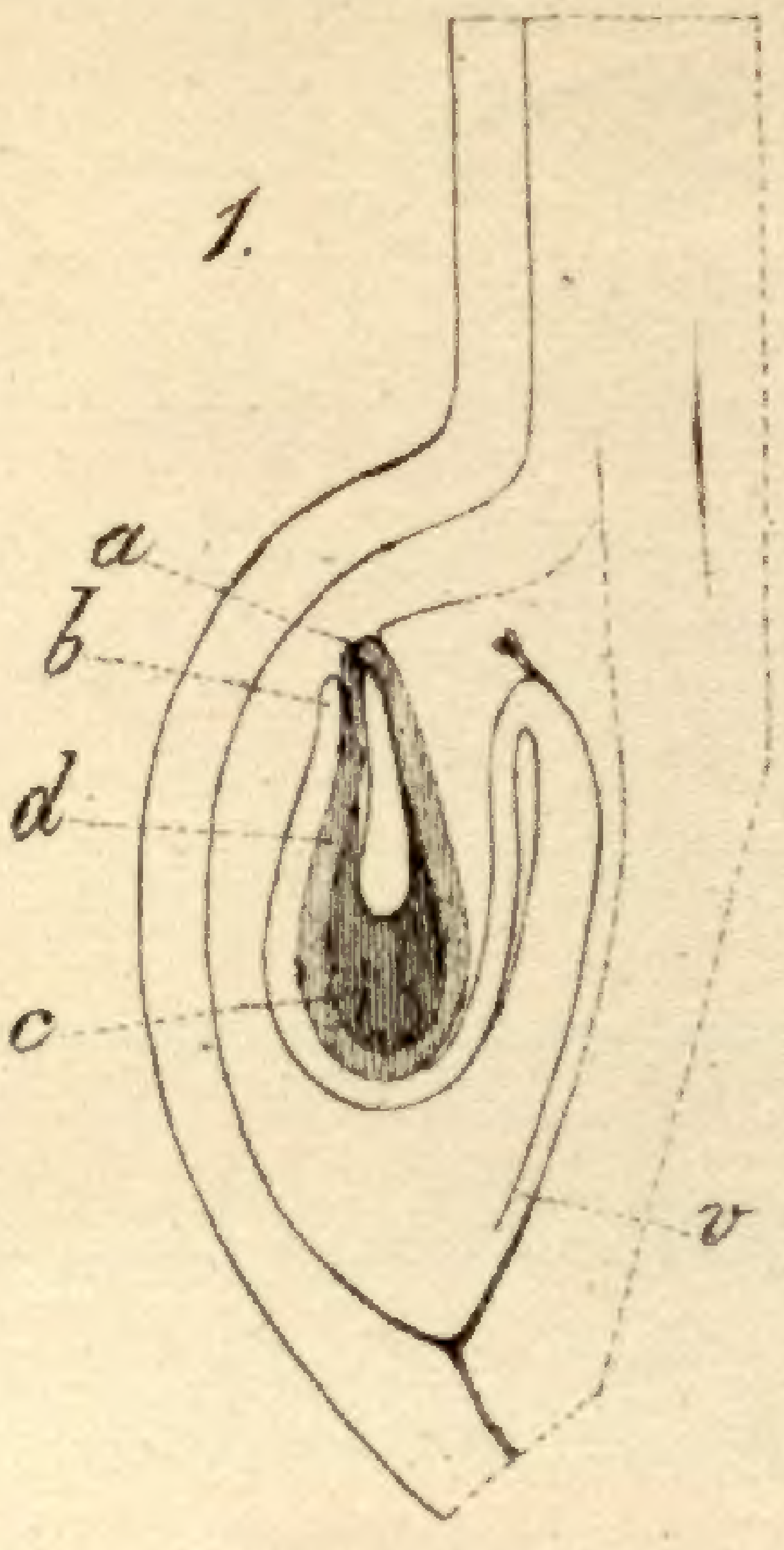
Revd. M J B. del.

Madeley litho 3 Wellington St. Strand

Antennaria Robinsonii.

London, Published by H. Bailliere, Regent Street, 1843.

1.



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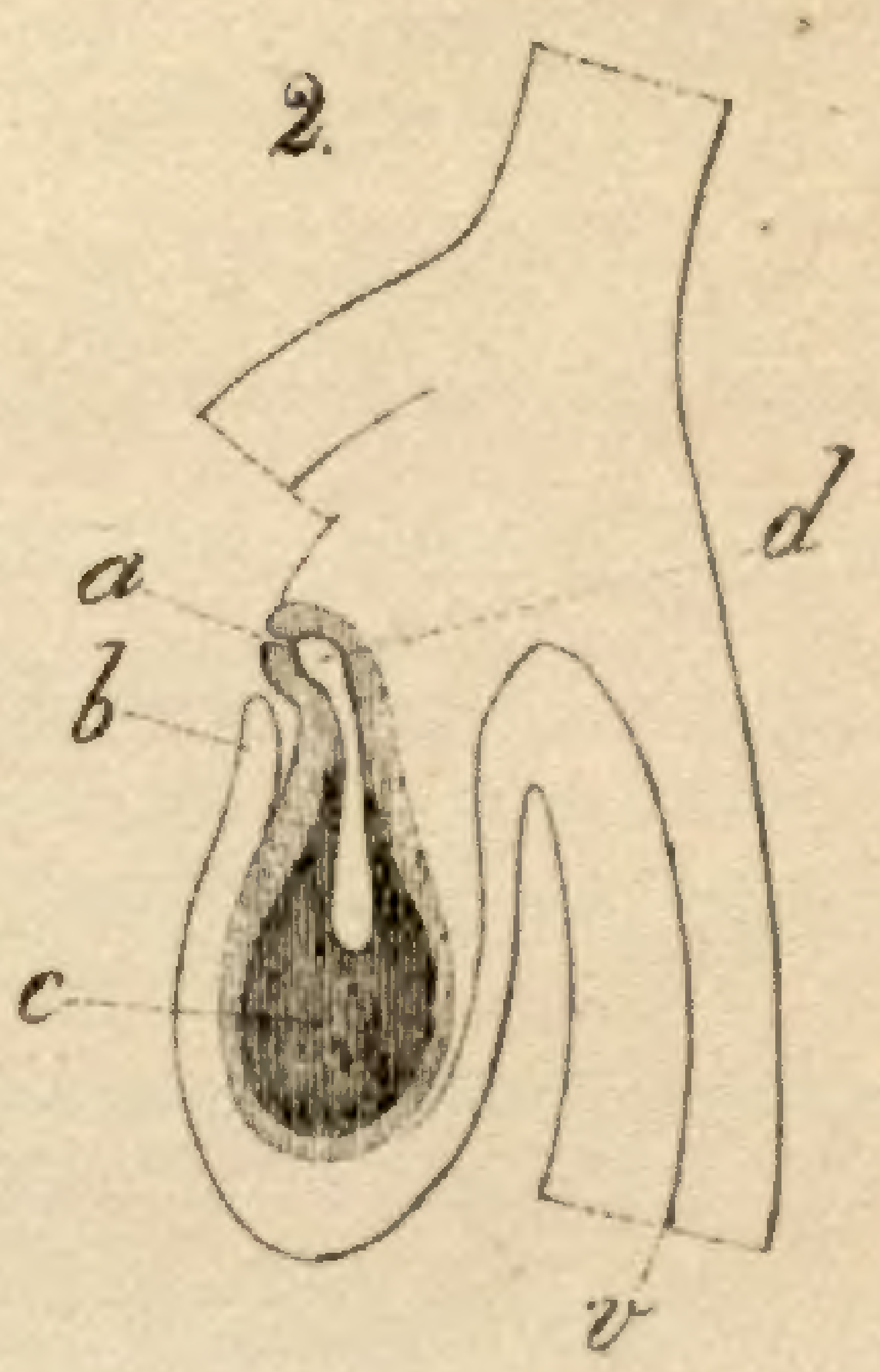

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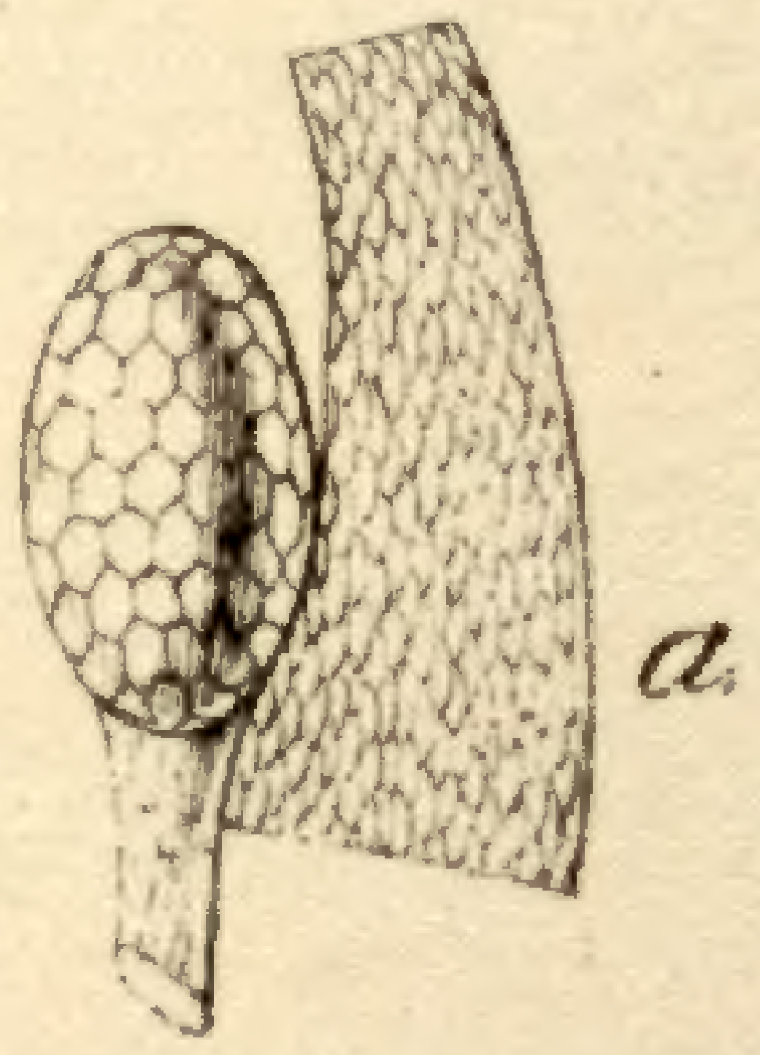

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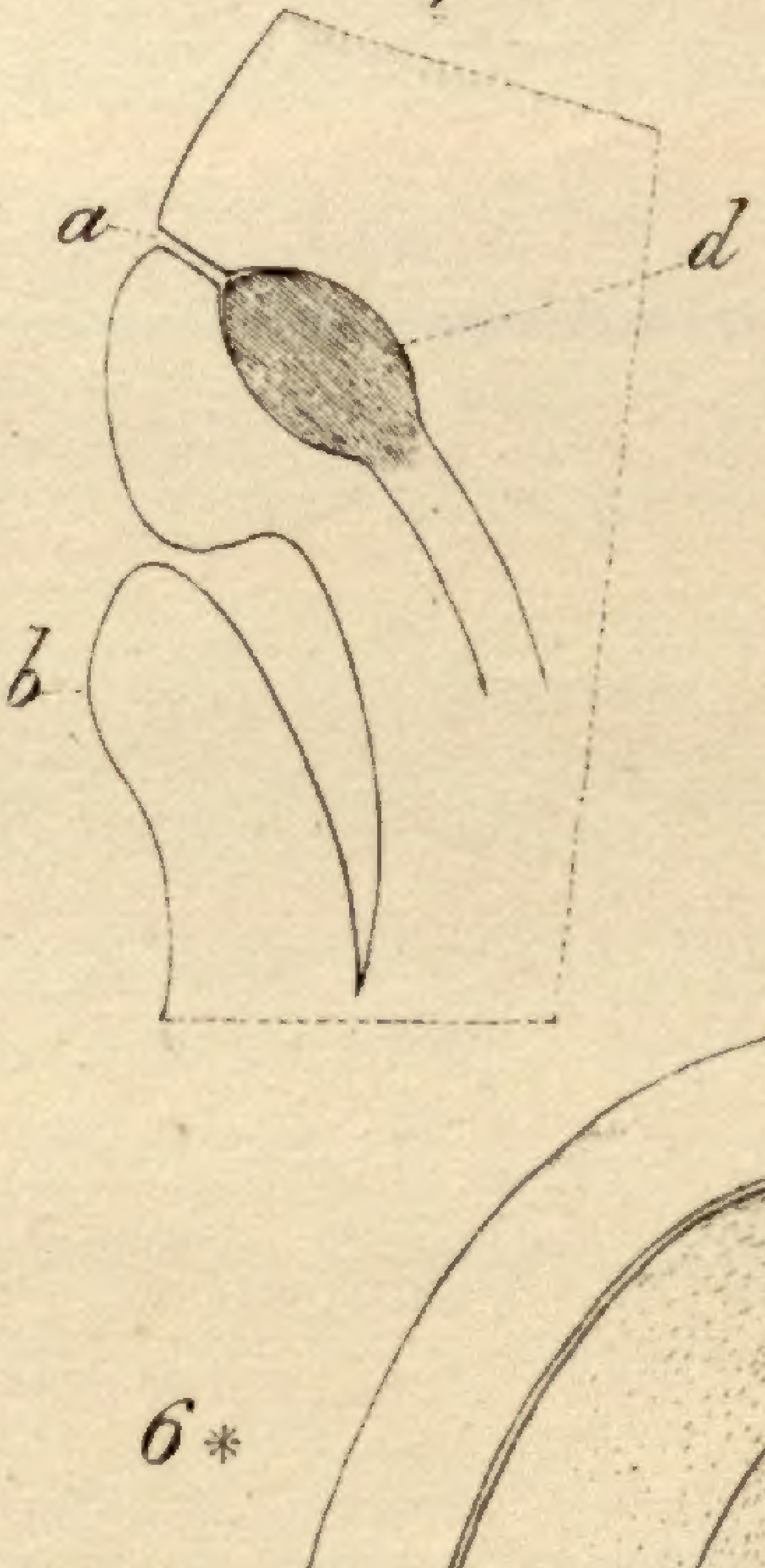

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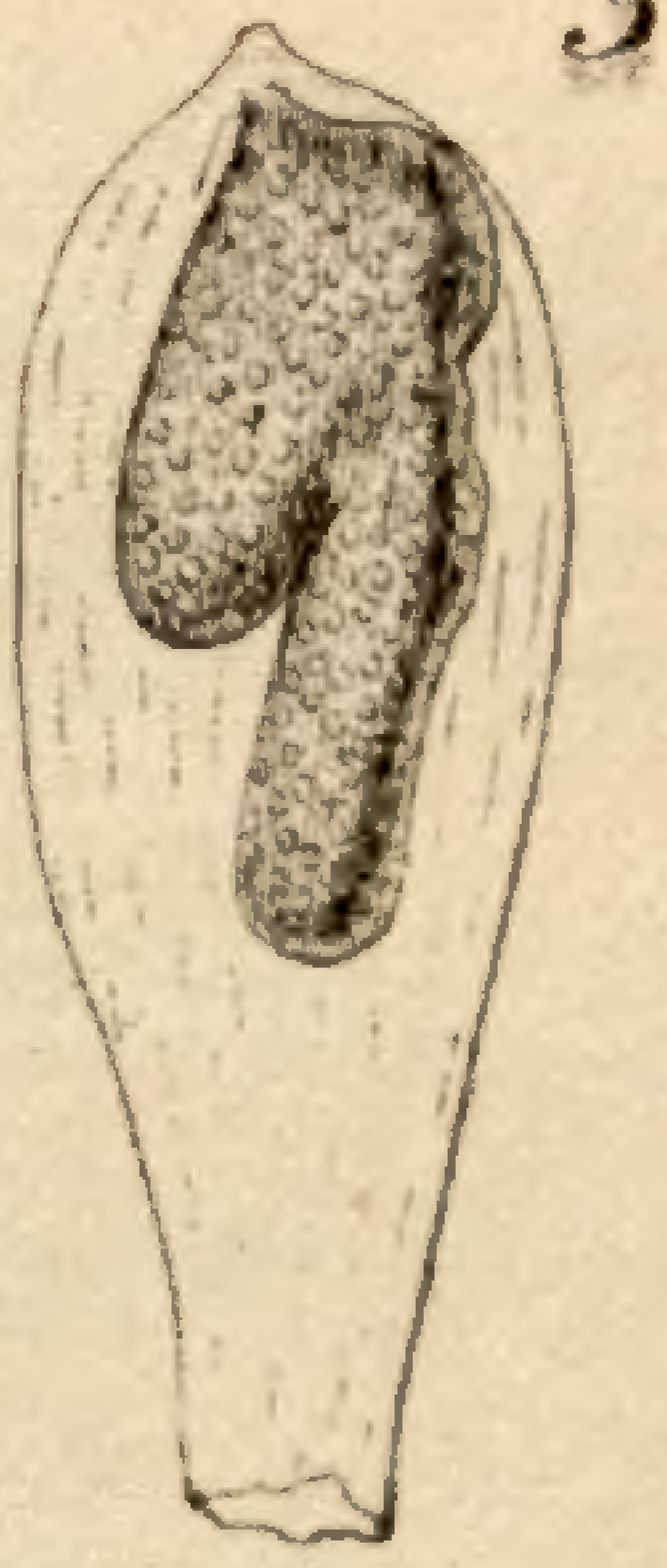

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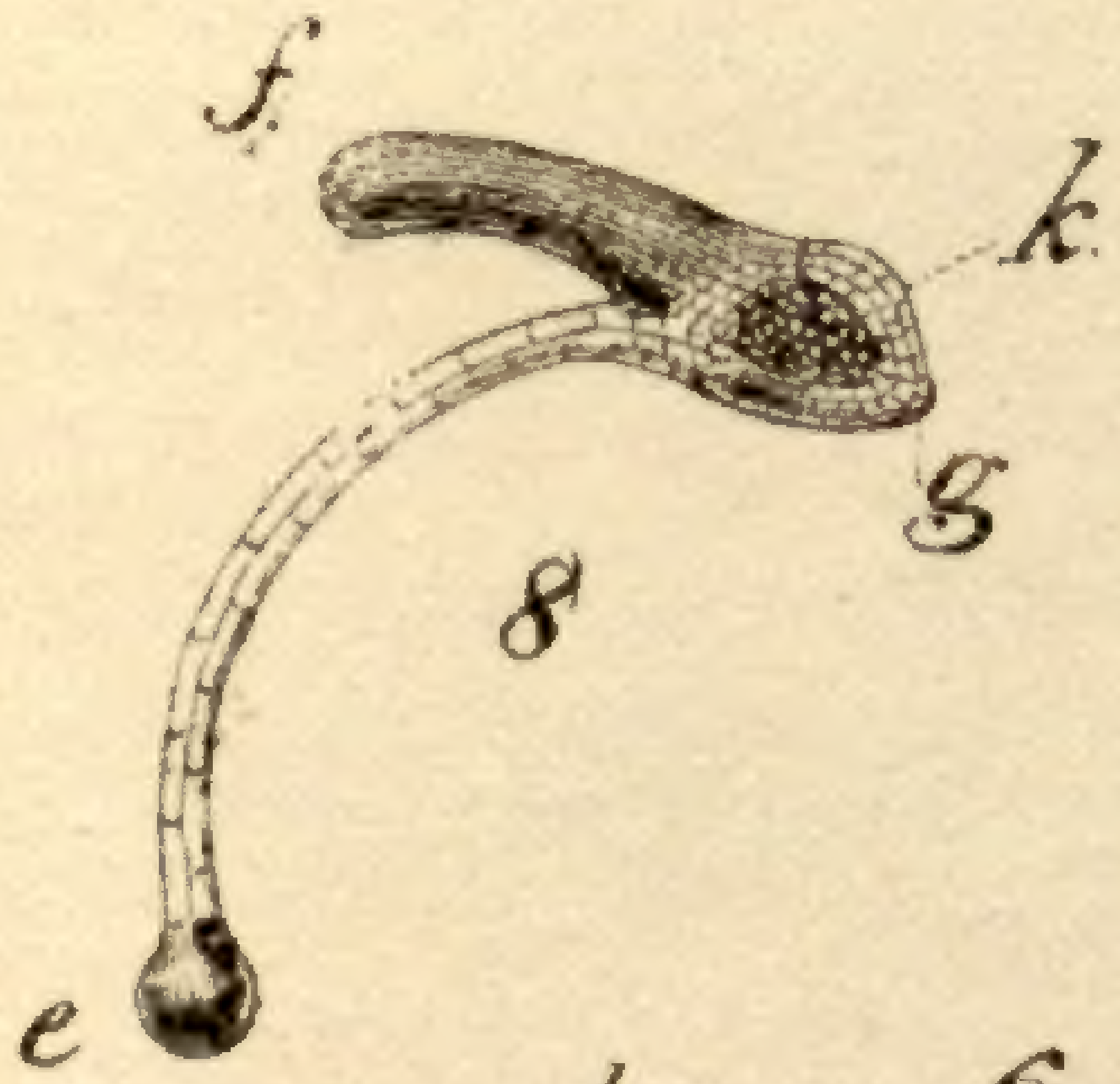

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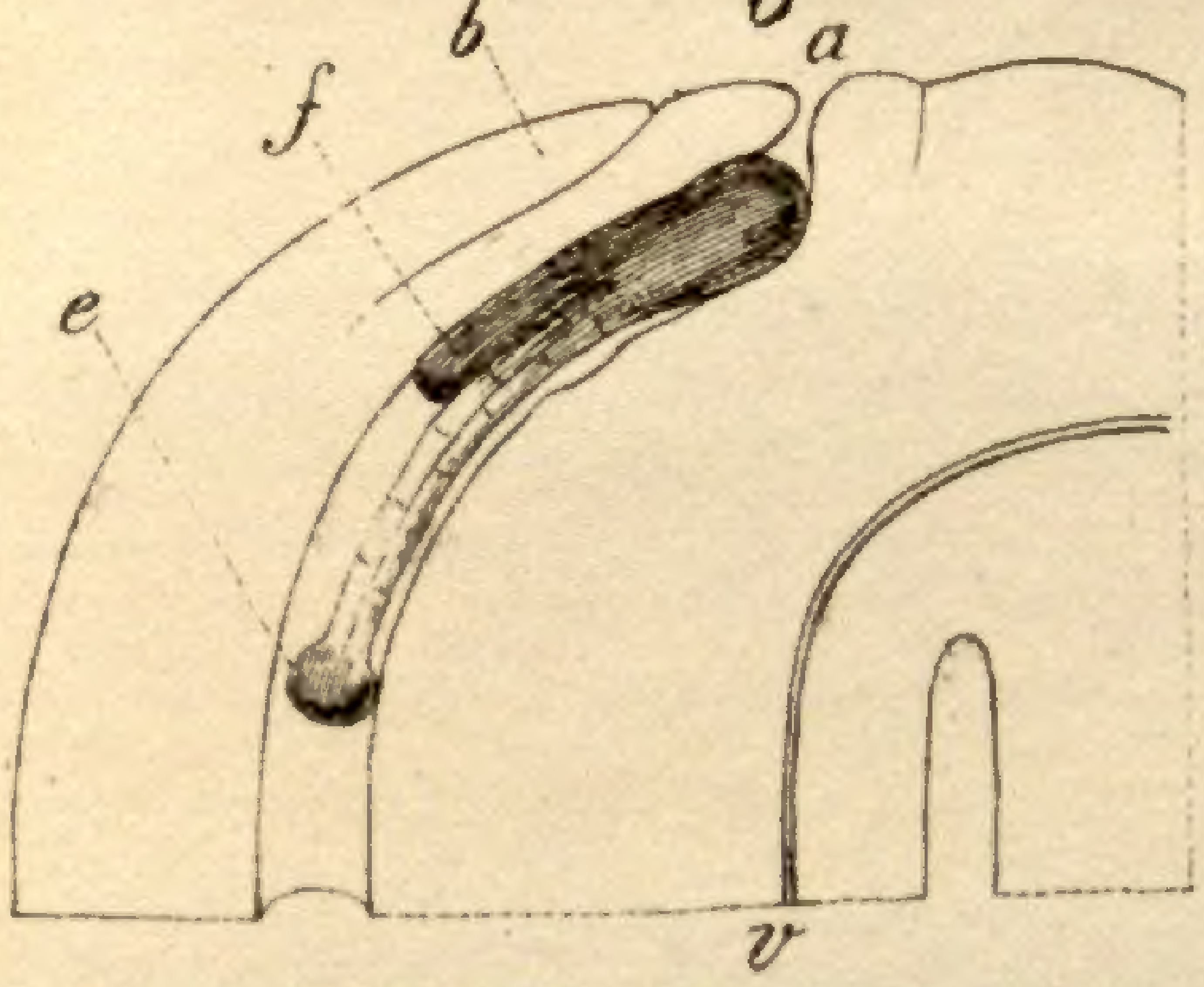

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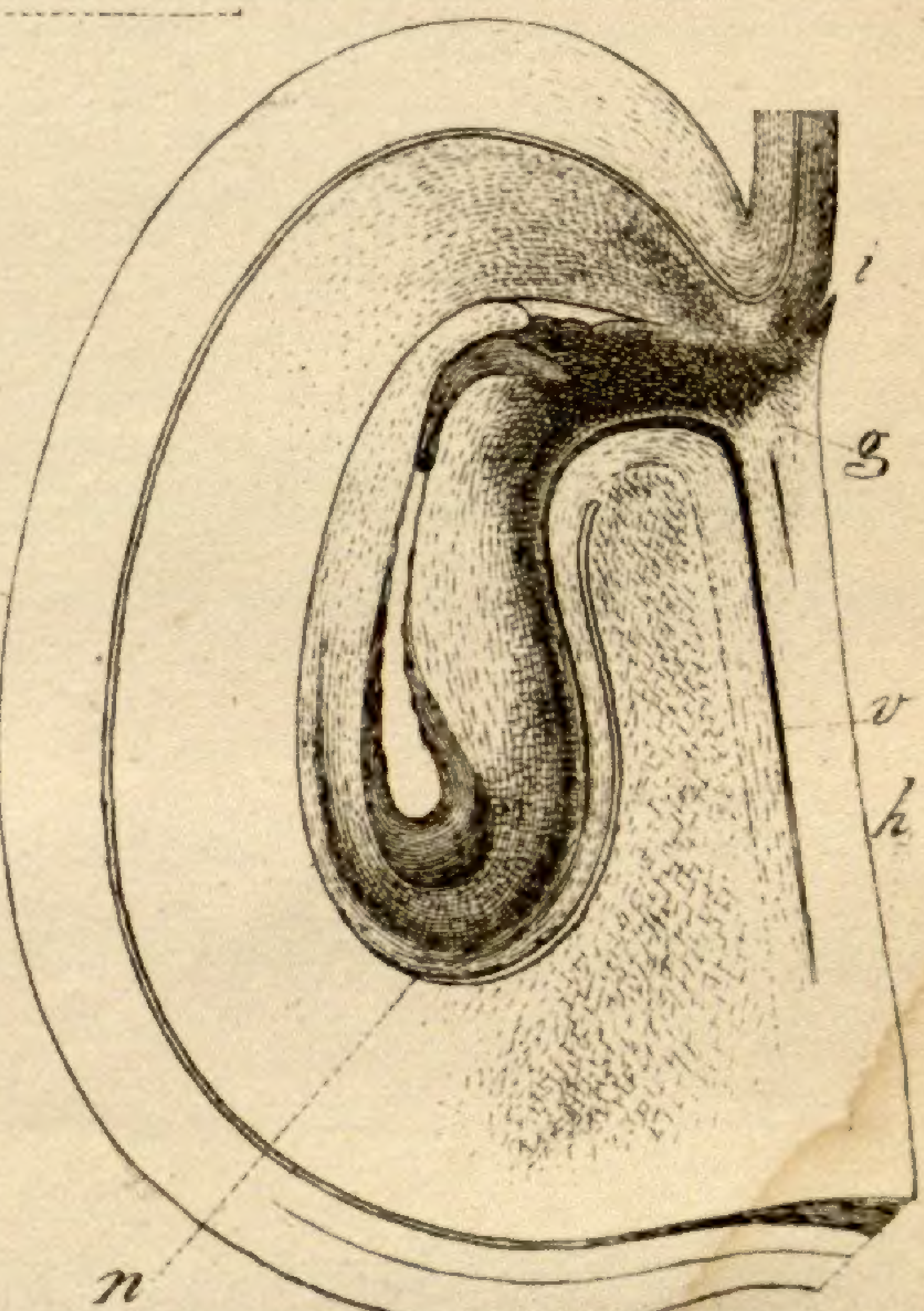

W. Wilson. del. W. Fitch. lith.

Madeley litho 3 Wellington St. Strand.

Tropæolum majus
Dissections of Embryo. &c.

London. Published by H. Baillière. Regent St. 1843.